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Report to the Chairman, Committee on Government Reform, House of Representatives

April 2001

ELECTRONIC RECORDS

Clinton Administration's Management of Executive Office of the President's E-Mail System

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Abstract
In response to your requests of May and August 2000, this report discusses our examination of the facts surrounding key events affecting the ability of the Clinton Administrations Executive Office of the President (EOP) to preserve certain e-mail messages deemed official government records. As you know, the Presidential Records Act (PRA) and the Federal Records Act (FRA) require the EOP to preserve official records, including e-mail. Adequate controls must be in place to ensure that these records, whether manual or electronic, are complete and maintained in accordance with applicable requirements. However, e-mail system malfunctions and management weaknesses prevented archiving of some e-mail records for EOP components, including the Office of the Vice President (OVP).

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G A O
Accountability * Integrity * Reliability

United States General Accounting Office
Washington, DC 20548

April 30, 2001

The Honorable Dan Burton
Chairman, Committee on Government Reform
House of Representatives

Dear Mr. Chairman:

In response to your requests of May and August 2000, this report discusses our examination of the facts surrounding key events affecting the ability of the Clinton Administration's Executive Office of the President (EOP) to preserve certain e-mail messages deemed official government records. As you know, the Presidential Records Act (PRA) and the Federal Records Act (FRA) require the EOP to preserve official records, including e-mail. Adequate controls must be in place to ensure that these records, whether manual or electronic, are complete and maintained in accordance with applicable requirements. However, e-mail system malfunctions and management weaknesses prevented archiving of some e-mail records for EOP components, including the Office of the Vice President (OVP).

In our review of these events surrounding the EOP's e-mail systems, you asked us to:

- develop a chronology of the e-mail malfunctions that included a description of EOP actions taken in discovering and repairing the malfunctions and recovering missing e-mail messages;
- identify officials and contractors responsible for maintaining the e-mail system and correcting the malfunctions;
- determine whether the OVP implemented adequate practices in accordance with applicable laws, regulations, and generally accepted industry practices for management of e-mail records;
- identify elements contributing to the estimated cost to repair the system and restore lost messages; and
- determine whether EOP officials notified government officials—including the Congress, the Justice Department, and the Office of Independent Counsel—when the malfunctions were discovered.

To address these objectives, we reviewed documents submitted to your Committee by the EOP. In addition, we observed July through October 2000 U.S. District Court hearings pertaining to EOP e-mail. We also submitted written questions to the EOP, and reviewed the written

responses and additional documentation provided to us. We performed our work from July 2000 through January 2001, in accordance with generally accepted government auditing standards; however, our review was limited by the unavailability of complete information pertaining to the OVP's retention of hard copy e-mail records, the EOP's assessment of contractor performance, and the EOP's notification of government officials. A detailed discussion of the scope and methodology for conducting our work is presented in appendix I.

Results in Brief

Two malfunctions that occurred in the EOP e-mail system prevented official records from being properly recorded in the Automated Records Management System (ARMS), which is a searchable database of e-mail records that was implemented by the EOP in 1994. The first—an anomaly with incoming Internet e-mail to affected users of the "Mail2" e-mail server—was identified in late January 1998. In November 1998, in addressing the Mail2 repair, an EOP contractor introduced a second problem that prevented incoming e-mail to users with first names starting with the letter D from being captured by ARMS. Although these malfunctions prevented certain e-mail records from being archived in ARMS, copies of these records were retained in the system backup tapes that were saved between November 1998 and June 1999 to ensure that the system could be restored after an interruption in operation. To ensure that official government records were preserved in a searchable format, the EOP initiated a tape restoration project in March 2000 to retrieve e-mail records from available backup tapes and add these records to ARMS. A detailed chronology of these events is presented in appendix II. Appendix III contains a list of federal officials and contractors involved in key events surrounding maintenance of the e-mail systems and repair of the Mail2 and Letter D malfunctions.

The OVP did not implement adequate records management practices to ensure that all e-mail records generated or received were preserved in accordance with applicable law and best practices. The OVP initially followed a dual approach to managing its e-mail records pursuant to the EOP policy—maintaining paper copies of records as well as retaining backup e-mail tapes. The OVP discontinued this approach at some point after May 1993—in the mistaken belief that the e-mail records were being archived in ARMS and that EOP's Office of Administration was managing the backup tapes. The OVP could not demonstrate that all e-mail records had been preserved by acceptable methods until May 2000, when ARMS began capturing all OVP e-mail records. As a result, about 600 system

backup tapes needed restoration to determine if any non-archived e-mail records existed on the tapes.

Several factors contributed to the expected cost to restore omitted EOP e-mail records to ARMS, estimated by an EOP contractor to be $11.7 million:

- An EOP support contractor's performance of tape management and systems maintenance and documentation activities contributed to the increased size and scope of the tape restoration project. Specifically, the EOP's assessments of contractor performance revealed that management of e-mail backup tapes was weak and that maintenance of e-mail systems and user accounts needed improvement. In addition, the automated link between the EOP's e-mail system and ARMS was not documented as required. As a result, the EOP could not identify the specific tapes within its entire tape population that needed restoration and could not readily understand and optimize records management controls.
- The EOP did not effectively monitor management of e-mail records. It did not include critical elements in its monitoring program, such as evaluations of the creation of records, maintenance and use of records, and records disposition. This increased the time needed to detect the Mail2 and Letter D malfunctions and added to the accumulation of backup tapes to be restored.
- Scrutiny of the e-mail malfunctions and the EOP's tape restoration practices by external authorities introduced additional project tasks, including contracts for independent verification and validation of the restoration process and for additional security over the project.

Although the EOP knew of the malfunctions that prevented e-mail from being captured by ARMS from October 1996 through mid-May 1999, officials stated that they did not understand the breadth and scope of the impact of these malfunctions on the EOP's response to subpoenas and production of other documents until February 2000. The EOP claims that it notified appropriate investigative bodies at that time. However, we were unable to obtain sufficient evidence to confirm that these notifications were made.

We requested comments on a draft of this report from the EOP and the personal representatives of former President Clinton and former Vice President Gore. The Deputy General Counsel, Office of Administration, EOP, orally provided a technical clarification, which was incorporated. The Counsel to former Vice President Gore provided written comments stating that (1) the report did not explicitly state that we found no

evidence of attempts by OVP staff to deliberately fail to preserve records, and (2) ARMS was a unique system for which best practices did not apply and additional information on the creation and use of this system was provided. In regard to the statements regarding the intent of OVP staff, our review—as requested—focused on the OVP's management of e-mail records. We did not assess the intent of individuals responsible for managing these records and, as such, made no conclusions on this subject. Regarding ARMS, we disagree with the Office of the former Vice President's characterization of the applicability of best practices to ARMS. The best practices cited in this report currently exist in the form of National Archives and Records Administration guidance and apply to records management programs, irrespective of the type of system used. However, we have revised the report to include the additional information on ARMS that was provided. The Office of the former Vice President also provided technical comments that we have incorporated as appropriate. The representative of former President Clinton provided a letter, which stated that he did not have access to the records necessary to properly review and comment on its accuracy.

Background

PRA, set forth in title 44 of United States Code, chapter 22, requires the President and Vice President to adequately record their official acts, maintain certain official records, and transfer custody of such records to the Archivist of the United States upon termination of their terms of office. Pursuant to the PRA, both the Office of the President and the Office of the Vice President are to implement records management controls and other necessary actions to ensure that presidential and vice presidential activities, deliberations, decisions, and policies are adequately documented and maintained. It also provides that presidential records shall be made available pursuant to subpoena or other judicial process and to either House of Congress, and prohibits destruction of records without prior concurrence of the Archivist and notification of Congress 60 days prior to disposal. The Archivist promulgates standards and guidance for implementation of PRA; these are contained in title 36 of the Code of Federal Regulations (CFR). This regulation defines criteria for access to and disposition of presidential records.

Federal records are subject to the provisions of FRA, set forth in title 44 U.S.C., chapters 29, 31, and 33. FRA requires the heads of federal agencies to make and preserve records documenting the official activities of the agency. FRA directs federal agencies to establish (1) a program for the management of agency records, (2) effective controls over the creation, maintenance, and use of records, and (3) safeguards against the removal

or loss of records. The Archivist promulgates standards and guidance for implementation of FRA, which are contained in title 36 CFR. Requirements for federal records are more extensive than are those for presidential records, and specify that federal agencies

- preserve records documenting the official activities of federal agencies to protect the legal rights of the government and of persons directly affected by the agency's activities;
- periodically monitor staff determinations of the record status of documentary materials;
- implement a records maintenance program so that complete records are filed or otherwise identified and preserved and that records can be found when needed;
- implement an agencywide program for the management of all federal records created, received, and stored on electronic media;
- ensure compliance with federal criteria and review electronic information systems periodically for conformance with established agency procedures, standards, and policies;
- develop and maintain up-to-date documentation about all electronic information systems adequate to specify technical characteristics, understand the purpose and function of the systems, and ensure timely, authorized disposition of records;
- consider specific criteria when developing procedures for maintenance of electronic mail records in recordkeeping systems, including copying records from the e-mail system to a separate recordkeeping system;[1] and
- retain records from e-mail systems in an off-line storage format. Agencies that use electronic formats (such as optical disk or magnetic tape) must maintain the ability to convert the records to the National Archives and Records Administration's required format and medium at the time of transfer. Agencies that maintain paper files as their recordkeeping systems are required to print their electronic mail records and the related transmission and receipt data.

To ensure the adequacy of management and control of federal information systems, the Office of Management and Budget (OMB) issued circulars A-123, *Management Accountability and Control*, and A-130, *Management of Federal Information Resources*. Circular A-123 requires that federal

[1]A recordkeeping system is a manual or automated system in which records are collected, organized, and categorized to facilitate their preservation, retrieval, use, and disposition. Because they do not have the features specified by the National Archives and Records Administration, system backup tapes are not to be used for recordkeeping purposes.

agencies implement adequate internal controls and management structures to ensure the effective operation of federal programs. Appendix III of circular A-130,[2] *Security of Federal Automated Information Resources*, requires that federal agencies periodically test system controls meant to ensure the integrity, confidentiality, and availability of information resources.

The EOP Policies Required Management of Records

The Administration issued guidance to clarify the responsibilities of each EOP component regarding presidential, federal, and personal records in order to implement the provisions of both PRA and FRA. A detailed policy and procedures document issued by the EOP in May 1993 required that no federal or presidential e-mail records could be deleted unless maintained in an electronic recordkeeping system or printed and placed in a file. In addition, it required that the White House Records Management Office monitor electronic systems to ensure that correct record status determinations had been made for presidential and federal e-mail records. This policy was applicable to all EOP components,[3] including the OVP.

In May 1997, the White House replaced the PRA section of the 1993 policy with one that provided a summary of White House policies and guidance regarding PRA. It required preservation of all original presidential records and all materials covered by subpoena or other such requests. It also directed each staff member to determine the record status of outgoing e-mail messages and to maintain hard copy records in organized files. According to EOP officials, the policy issued in 1997 was substantively the same as the 1993 policy, and it served as a reminder to staff of the policy originally articulated in the 1993 policy regarding compliance with PRA.

History Surrounding the EOP E-mail Systems

A series of events occurred between July 1994, when ARMS was implemented, and March 2000, when the tape restoration project was initiated. These events are detailed in appendix II. Various EOP federal and contractor staff were involved in the maintenance and repair of the

[2]OMB circular A-130 applies to EOP's Office of Administration component, which had responsibility for electronic systems, including e-mail and ARMS.

[3]The EOP consists of the White House Office, the OVP, and other components, such as OMB and the Council on Environmental Quality. EOP components that create and receive presidential records included the White House Office, the OVP, the National Security Council, and the Office of Policy Development.

e-mail systems between October 1996 and June 1999; they are listed in appendix III.

According to the EOP, in order to comply with the Armstrong ruling,[4] it contracted with Information Management Consultants, Incorporated, to develop the ARMS recordkeeping system. ARMS began archiving e-mail records in 1994.[5]

Since 1996, the EOP had used Lotus Notes® software as its e-mail application. During the former administration, the Office of Administration within the EOP maintained four Lotus Notes e-mail servers, one remote server, and one ARMS interface server, which transferred e-mail records from the e-mail system to ARMS.

E-mail messages designated as records subject to either PRA or FRA were passed to ARMS through the interface between the two systems. The Notes-to-ARMS interface program automatically identified unrecorded e-mail messages when it periodically scanned for new messages in groupings of user accounts called "views." User accounts were distributed to a view depending on the first letter of the account name. Then, the ARMS interface copied these new messages for processing to ARMS and marked the messages as "recorded." In its comments on a draft of this report, the Office of the former Vice President stated that the ARMS database maintained e-mail records in a searchable format, which came to facilitate the EOP's responses to document requests and subpoenas sometime much later in the administration. A key feature included in ARMS was the ability to perform a computerized search of e-mail using keyword terms to search for responsive materials.

From October 1996 through May 1999, two malfunctions occurred in the EOP e-mail system that prevented incoming Internet e-mail from being properly archived in ARMS. In late January 1998, an EOP employee initially identified the first of these malfunctions—an anomaly with incoming Internet e-mail to affected users of the Mail2 e-mail system server—and documented this in an incident report. According to EOP

[4] Armstrong v. EOP, 810 F. Supp. 335 (1993). The court in the Armstrong case held that the then-current EOP records management practice did not save all information from an electronic record, and thus violated FRA.

[5] The EOP initially used ARMS with the e-mail system that preceded use of the Lotus Notes® e-mail system.

officials, efforts were undertaken then to analyze this anomaly, but it was thought to be an isolated event. According to these officials, the precise cause of the Mail2 malfunction was determined in June 1998 by Northrop Grumman, the EOP's information technology services support contractor since October 1997, when performing other work on the Lotus Notes e-mail system interface to the ARMS records management database. The malfunction was caused by improper user account configuration in which the server name "Mail2" was spelled "MAIL2." Because the ARMS interface program did not recognize the upper case spelling of the mail server name, it was unable to locate and capture new incoming e-mail messages for these user accounts. This malfunction was subsequently repaired in November 1998.

Also in November 1998, in addressing the Mail2 repair, a second problem was introduced by Northrop Grumman staff that prevented incoming Internet e-mail to users with first names starting with the letter D from being captured by ARMS. It involved omission of the letter D from the Lotus Notes view (described above), causing the ARMS scanner to skip those accounts beginning with the letter D and not capture incoming e-mail to the affected user accounts. This malfunction was discovered in April 1999 and repaired in May 1999. Appendix IV presents a time line of key events pertaining to the discovery and repair of the Mail2 and Letter D malfunctions.

The EOP e-mail systems were periodically backed up, or copied, to tape media for use in the event of system failure and subsequent need to restore the system to full operation. In addition, Northrop Grumman followed a standard industry practice of economical tape recycling. This involved retaining the tapes for 3 weeks and then recycling them—resulting in either overwriting the data on the tapes or destroying the used tape and replacing it with a new tape. Because the backup tapes contained copies of e-mail not processed to the ARMS records management database, the EOP stopped its normal practice of tape recycling from June 1998, when the cause of the Mail2 malfunction was documented, until June 1999, after the Letter D malfunction was repaired.

In March 2000, the EOP implemented the tape restoration project, for which it hired Enterprise Computing Solutions Technology, Incorporated (ECS) to recover the lost e-mail messages and restore the messages to the ARMS records management database. The EOP hired another contractor, Vistronix, to oversee the work of ECS. In July 2000, Vistronix estimated that the project would cost about $11.7 million for restoration of about

6,000 tapes. Table 1 presents a breakdown of the $11.7 million budgeted cost. Appendix V presents further details on this.

Table 1: Summary of Budgeted Tape Restoration Costs.

Budgeted cost element	Description of cost element	Estimated cost
ECS contract	Restoration of e-mail messages not recorded in ARMS	$5,125,829
Vistronix contract	Independent validation and verification of the tape restoration project	1,993,819
AAC Associates contract	Advice on recovery of OVP e-mail	900,000
Special services	Forensic analysis and recovery of broken or unreadable tapes	2,092,400
Direct costs	Additional hardware, software licenses, and 12,000 tapes for two sets of tape copies	498,480
Other	Project overrun contingency	1,098,891
Total		**$11,709,419**

Source: Tape restoration project cost estimate report prepared by Vistronix, Incorporated, for the EOP in July 2000.

The OVP Did Not Ensure Adequate Preservation of E-mail Records

According to the EOP, although the 1993 EOP records management policy applied to the OVP, the OVP did not implement adequate practices to ensure continual preservation of its e-mail records in accordance with PRA, which required implementation of records management controls. The OVP's internal policy from 1993 until some time in 1998 was twofold—to rely on its staff to retain its e-mail server backup tapes and to maintain files of hard copy e-mail records.[6] According to the EOP, however, from May 1993 until May 2000, the OVP could not demonstrate that its practices for managing presidential e-mail records provided continual preservation of records during the former administration.

During a portion of the administration, the OVP was responsible for operation, maintenance, and records management of its own e-mail system separate from that used by the EOP. In March 1998, responsibility for operation and maintenance of the system transferred to the Office of

[6]According to EOP, a December 21, 2000, letter from EOP to the National Archives and Records Administration documented agreement reached regarding OVP's records management approach. However, our review of this letter, obtained from the National Archives and Records Administration, found the letter to discuss disposition of e-mail records upon the presidential transition and it did not mention the OVP records management approach.

Administration. However, the OVP did not communicate its requirements for management of e-mail records and assumed that records management responsibility also transitioned to the Office of Administration. According to EOP, the Office of Administration assumed that the OVP had retained records management responsibilities and did not take steps to ensure that OVP e-mail records were appropriately preserved.

According to the EOP, "at some subsequent point" since May 1993, the OVP discontinued retention of paper copies of e-mail records because it believed its e-mail to be captured by ARMS. This mistaken belief was based on the precedent that ARMS managed e-mail records for all other EOP components since its implementation in 1994. In its comments on a draft of this report, the Office of the former Vice President stated that this belief was also based on the fact that searches of ARMS produced OVP e-mail records and on the observation that some outgoing OVP e-mails were in fact being managed by ARMS (as discussed below). The EOP estimated that "by 1998," the OVP discontinued retention of paper copies of e-mail records not captured by ARMS (but subject to PRA). Therefore, paper copies of e-mail records did not exist for a period of at least 2 years (1998 and 1999) and up to 7 years (1993 through 1999). In its comments on a draft of this report, the Office of the former Vice President stated that these records are being restored as part of the tape restoration project. We requested access to files of any hard copy e-mail records covering this period, but it was not provided.

Although the OVP did not continually retain paper copies of e-mail records in accordance with the EOP policy, it did retain the backup tapes created through late March 1998 (except for a backup malfunction from mid-February to mid-March 1994). According to the EOP, the OVP backup tapes were for system recovery and records archival, but they were not in a text-searchable format.[7]

After transition of the e-mail system in March 1998, the Office of Administration maintained the OVP e-mail system in accordance with its established operating practices for other EOP systems. One practice followed was to recycle system backup tapes every 3 weeks. Application of this practice to the OVP system resulted in irretrievable loss of the

[7]According to the EOP in June 2000, the OVP tapes were saved for compliance with PRA. In January 2001, the EOP stated that the OVP did not routinely search its backup tapes in response to subpoenas and that only through the tape restoration project has the OVP demonstrated that the tapes are recoverable.

electronic form of e-mail records while tapes were recycled between March 1998 and March 2000. Another practice was to use the standard EOP ARMS e-mail template[8] to create new OVP e-mail user accounts between March 1998 and March 2000, which inadvertently caused ARMS to capture outgoing e-mail records sent by these users. The result of this practice was that ARMS captured outgoing e-mail for those OVP users that had the EOP e-mail template (133 of 157 OVP users). When it learned in March 2000 that ARMS did not fully preserve OVP e-mail records, the EOP ordered that tape recycling be stopped and initiated corrective action. According to the EOP, all OVP e-mail users, except Senate OVP staff,[9] became fully recorded in ARMS as of May 8, 2000. However, because the OVP did not ensure the preservation of e-mail records, in either paper or electronic form, presidential records may have been irretrievably lost. In addition, about 600 backup tapes were added to the restoration project to recover as many e-mail records as possible.

Several Factors Have Driven Cost of E-mail Restoration

Several factors affected the size and scope of the tape restoration project and the related estimated cost of $11.7 million to restore omitted e-mail records to ARMS. First, an EOP support contractor's performance led to increases in the number of tapes for restoration and adding to the passage of time necessary to diagnose system anomalies and repair malfunctions. Second, the EOP's monitoring of e-mail records did not provide reasonable assurance that ARMS captured all required records, which increased the time needed to detect the Mail2 and Letter D malfunctions and added to the accumulation of backup tapes for the restoration effort. Finally, tasks were added to the project due to legal scrutiny of the e-mail malfunctions and the EOP's tape restoration practices.

The EOP's Support Contractor Did Not Effectively Perform Tasks Related to E-mail Systems

In supporting its information technology functions, the EOP had a primary support services contract, which required the contractor to provide common services to all users of the EOP data center. The data center provides general computer operations, server and network support, and software support. Under its contract, Northrop Grumman was required to

[8]The ARMS e-mail template was configured to automatically pass to ARMS a blind copy of all e-mail records sent by an EOP e-mail user.

[9]Because the Vice President also serves as the President of the Senate, some OVP staff support the Vice President's Senate duties. Some Senate OVP staff used a separate e-mail system controlled by the Senate.

- "manage cartridge tapes, monitor catalog assignments, maintain appropriate tape management systems (automated on IBMs and VAXs, manual on all other platforms),[10] [and] maintain back up system tapes in accordance with Government standards/procedures" as part of its management of the data center tape library;
- develop and support Notes e-mail, administer Notes systems including server hardware and software configuration, maintain mail backup systems, resolve hardware and software problems for the ARMS interface, provide technical support for operation and maintenance of the interface, and develop and implement quality assurance programs for this work; and
- develop system documentation to capture the functions, interface, and internal control requirements, and document requirements of existing systems that need updating or were not previously documented.

The contract also included provisions for EOP oversight and monitoring of contractor performance. The EOP established contract performance measures and an associated performance evaluation plan, which provided a mechanism for formal measurement and documentation of contractor performance and allocating award fees and penalties based on performance. The EOP conducted formal award fee assessments of contractor performance twice per year, in accordance with the contract.

In monitoring the contractor, the EOP found weaknesses in the contractor's performance of data center tape management tasks. The EOP's award fee assessment report from October 1998 to mid-April 1999 noted that tape management, in general, had been a weak point in the contractor's performance. Specifically, the report stated that the contractor had not created an inventory of the e-mail system backup tapes, and that these tapes continued to mount in an uncontrolled manner. As a result, the EOP rated the contractor's performance as marginal and withheld about $10,400 in award fees for this and other data center tasks.

The EOP's subsequent award fee assessment report for the period of mid-April to September 1999 stated that there continued to be a lack of effective tape management in the data center and rated the contractor's performance as unsatisfactory. We were not able to determine what, if

[10]According to FRA, manual external labels or automated tape management systems for tapes storing electronic records must provide unique identification, including the name of the unit responsible for the data and system title. Other identifying information such as file title(s), dates of creation, volume serial number, and software dependency must be maintained but not necessarily attached to the tape.

any, award fee was withheld because the EOP did not provide us with complete award fee documentation. The problems with tape management were not subsequently resolved. In March 2000, the EOP tape restoration project manager stated in a memorandum that e-mail backup tapes needing restoration could not be identified and that all tapes that had been retained would need to be examined to determine their contents.

The EOP also documented deficiencies in the contractor's performance of e-mail system and user account maintenance. According to the EOP, the contractor had not implemented satisfactory quality controls to prevent or detect mistakes in user account and system configurations. As a result, the EOP did not detect the Letter D malfunction for 5 months and the Mail2 malfunction for almost 2 years. For example:

- The EOP's award fee assessment report for October 1998 through mid-April 1999 stated that the configuration error that caused the Letter D malfunction "should not have occurred and [it] could have been fixed on the spot had [the contractor implemented] proper testing procedures and quality assurance measures been in place." As a result, the EOP rated the contractor's performance in this area as unsatisfactory and withheld $20,832 in award fees for this and other system life cycle tasks.
- The error in configuration of user accounts that caused the Mail2 malfunction—entering "MAIL2" instead of "Mail2"—continued even after it was discovered in June 1998. In April 1999, the EOP found that this configuration error had not only occurred continually on the Mail2 server since October 1996, but also on another EOP e-mail server. The EOP initiated a review of controls to detect such configuration errors in May 1999.

Finally, up-to-date system documentation for the e-mail system interface to ARMS was not maintained, as required by the contract and under FRA. Accurate system documentation and availability of source code facilitate an understanding of how a system functions, which enables the system owner and system administrator to diagnose system anomalies—such as those experienced with the Mail2 and Letter D malfunctions—and optimize system controls. However, although a subcontractor to a former EOP contractor documented the system when it developed the interface between the Lotus Notes and ARMS systems, the Office of Administration staff found that both the system documentation and the programming source code were missing in 1997. Until the source code was located in 1998 and the EOP contractor documented the system functions in 1999, the EOP was unable to implement changes to the code or develop automated programs to monitor the effective functioning of the interface.

These shortcomings in tape management, system and account maintenance, and system documentation contributed to the time necessary for the EOP to detect the malfunctions and ultimately hindered the EOP's identification of the e-mail backup tapes requiring restoration, increasing the quantity of tapes that would have to be examined in the project. From the time between identification and repair of the malfunctions—for Mail2, June to November 1998; for Letter D, April to May 1999—and restoration of the tapes that began in March 2000, the EOP continued to accumulate backup tapes. This resulted in raising the total number of tapes to be restored from 788 in December 1998 to about 4,500 in January 2001 (comprised of 3,900 Mail2 and Letter D tapes and 600 OVP tapes).

Monitoring Program Did Not Ensure Effective Management of E-mail Records

While the EOP's 1993 policy required that the White House Records Management Office monitor electronic systems containing presidential and federal e-mail records, the EOP's records management program did not provide reasonable assurance that adequate controls were in place and functioning to monitor the preservation of such records. Such a monitoring program should include evaluations of the creation of records, maintenance and use of records, and records disposition to determine compliance with established agency and federal recordkeeping requirements.

Pursuant to its policy, the EOP implemented a monitoring program in July 1994 to identify systemic problems with records determinations made by EOP e-mail users. The EOP's monitoring program applied, however, only to federal records and did not cover monitoring of presidential records as required by the EOP policy. In addition, the monitoring program did not include tests to ensure the completeness of federal and presidential e-mail records captured by ARMS that are created by incoming e-mail messages to the EOP e-mail users. Controls were specifically needed over these incoming messages because the e-mail system allowed the EOP users to delete incoming messages before they were automatically copied to ARMS. This ability, coupled with the EOP's normal practice of recycling backup tapes, may have resulted in the irretrievable loss of the electronic form of e-mail records. However, the EOP did not document or regularly test the adequacy of records management controls until May 1999 after repair of the Letter D malfunction, when the EOP implemented an automated e-mail monitoring program. Because controls were not in place until May 1999, the Letter D malfunction went undetected for 5 months, adding additional backup tapes to the size of the restoration project.

Legal Scrutiny Added Restoration Tasks

Scrutiny over the tape restoration project by the U.S. District Court,[11] Office of the Independent Counsel, and the Congress, began in March 2000, introducing additional tasks. Examples of such tasks include use of law enforcement imaging software (required by the Office of the Independent Counsel) and development of an interim searchable database and hiring of an independent validation and verification contractor and security guard support to enhance integrity of tape processing (required by the U.S. District Court and the Congress).

According to the EOP, the restoration project was initiated in March 2000—not in 1998 after repair of Mail2 or in 1999 after repair of Letter D—because the EOP's focus in 1999 was on remediation of its systems to ensure continued processing after the year 2000 and leap day (February 29, 2000) rollovers. As a result, the quantity of e-mail messages requiring restoration escalated, drawing the attention of authorities interested in ascertaining whether the EOP had implemented adequate controls. Table 2 lists restoration project activities estimated at about $3.5 million that were introduced because of this scrutiny.

Table 2: Additional Project Activities and Related Costs.

Project activity	Cost (estimated)
Independent verification and validation contractor	$1,993,819
Security (two contracts):	
General Services Administration	(actual) 97,920
TW & Company	54,894
Development of interim searchable database	963,400
Tape inventory and catalogue (list) tape contents	455,000
Total	**$3,565,033**

Source: Tape restoration project cost estimate report prepared by Vistronix, Incorporated, for the EOP in July 2000, the EOP summary of actual costs through October 29, 2000, and discussions with EOP officials.

[11]The tape restoration project was being monitored by Judge Lamberth of the U.S. District Court incident to the case of Alexander v. FBI (CA 96-2125, D.D.C.). The plaintiffs in that case had submitted document requests to the EOP in an attempt to discover relevant information in EOP's e-mail.

Limited Access to Information Prevented Confirmation of the EOP's Notification of Appropriate Officials

The EOP claimed to have notified investigative bodies as soon as it understood that document production might have been affected by the e-mail malfunctions. Although the cause of the Mail2 e-mail malfunction was known as early as June1998 and Letter D in April 1999, the White House Counsel's Office stated that it did not discover until February 2000 that the e-mail malfunctions "had affected the integrity of White House document productions." Thus, "the Counsel's Office did not perceive a need to notify investigative bodies" prior to that time.

According to EOP officials, when the extent of the malfunctions became clear to the White House Counsel's Office in February 2000, that office "had both written and oral communications with various investigative bodies regarding the Mail2 issue." The EOP provided us with copies of its correspondence to the House Committee on Government Reform that range in time from March 17 to October 30, 2000. On March 17, 2000, the EOP provided the Committee with a description of the e-mail system, the malfunctions, and their effect on document production. A letter to the Committee in June 2000 updated the status of e-mail records management for the Office of the Vice President. Finally, an October 6, 2000, letter from the EOP to the Committee referred to 30 letters from the EOP to various investigative bodies, between March 15 and October 3, 2000, including the Offices of Independent Counsel, congressional committees, and the Department of Justice.

We requested copies of these 30 letters, but we were not given copies of any of them. Without complete documentation, we were unable to confirm the EOP's claims to have notified officials concerning the effect of the e-mail malfunctions on respective document productions to investigative bodies other than the Committee. In its comments on a draft of this report, the Office of the former Vice President stated that as a matter of policy, "the EOP did not cross-pollinate its communications with various investigative bodies as a means of maintaining the confidentiality of the legitimate interests and investigative priorities of those investigative bodies."

Conclusions

Computer malfunctions, ineffective systems and records management practices, and miscommunication between EOP components led to e-mail records not being preserved by ARMS. As a result, the EOP initiated a time-consuming and expensive effort to recover e-mail records that had not been effectively managed.

The management control weaknesses have implications for the current administration that inherited the core e-mail systems and records management structures discussed in this report. Accordingly, we met with the current Special Assistant to the President and Director of the Office of Administration and interested EOP staff, to provide suggestions for establishing effective controls in the records management and e-mail system support functions. These officials stated that actions are underway to improve the management of electronic records within EOP. These efforts included developing and updating policies for federal and presidential records, defining procedures for electronic records, and establishing a chief information officer position.

Agency Comments and Our Evaluation

In written comments on a draft of this report, which are reprinted in appendix VI, the Counsel to former Vice President Gore had two general points. First, he stated that the report did not explicitly state that we found no evidence of attempts by OVP staff to deliberately fail to preserve records. In our report, our objective was to examine the facts surrounding the e-mail systems. Specifically, we were requested to assess the adequacy of management controls over EOP's records management system, particularly as they related to the numerous e-mail system malfunctions experienced by EOP since 1996. That assessment entailed the examination of management policies, programs, and practices as they related to effective records management controls and to the requirements of the PRA and FRA. Our review was not directed at assessing the intent of individuals responsible for preserving records and providing responsive records to investigative bodies. As such, we can offer no conclusions on this matter.

Second, the Office of the former Vice President stated that ARMS was a unique system for which best practices did not apply and provided additional information on the creation and use of this system that was not reflected in the draft report. In response, we have revised the report to reflect this additional information. However, we disagree with the Office of the former Vice President's characterization of the applicability of best practices to ARMS. Best practices for management of records currently exist in the form of National Archives and Records Administration guidance contained in title 36 CFR and apply to records management programs irrespective of the type of system involved. The majority of this guidance is prescriptive only for federal records; however, this guidance applies to ARMS because ARMS archives federal records. Also, the guidance does not explicitly preclude application of these practices in the management of presidential/vice presidential records. Although the

evolution of ARMS may continue, the stability of generally accepted records management best practices establishes a control foundation for any system, whether manual or automated.

Comments from the Office of the former Vice President are reprinted in appendix VI. In addition, this appendix contains our detailed responses to numerous technical comments that were provided.

In his comments on the draft report, the representative of former President Clinton stated that he had reviewed the draft but did not have access to the records necessary to properly review and comment on its accuracy. He urged us to incorporate comments that we received from EOP during the course of our review, which we have done as appropriate.

The Deputy General Counsel, Office of Administration, EOP, orally provided a technical clarification, stating that the May 1997 policy that replaced the PRA section of the 1993 policy was issued by the White House and not EOP, which we incorporated as appropriate.

We are sending copies of this report to the Honorable Henry Waxman, Ranking Minority Member; the Honorable Hector Irastorza, the Deputy Assistant to the President for Management and Administration, the White House; Bruce R. Lindsey, the personal representative of former President Clinton; Andrew M. Wright, Counsel to former Vice President Gore; and interested congressional committees. Copies will then be available on our Web site at www.gao.gov.

If you or your office have any questions about this report, please contact me at (202) 512-6240 or by e-mail at KoontzL@gao.gov. Nancy DeFrancesco, Michael Fruitman, Linda Lambert, and Charles Roney were major contributors to this report.

Sincerely yours,

Linda D. Koontz
Director, Information Management Issues

Enclosures

Appendix I: Scope and Methodology

To obtain information regarding events and to identify individuals key to the Executive Office of the President's (EOP) e-mail systems and the malfunctions experienced, we

- reviewed about 10,000 pages of documentation submitted to the House Committee on Government Reform by the EOP and its contractor Northrop Grumman;
- reviewed 159 hearing exhibits prepared by the Committee from the above documentation, and pertinent pieces of correspondence and other related documentation provided by the Committee;
- obtained copies of the EOP's task order OA8004 dated September 30, 1997, with Northrop Grumman, and letter contract OA20C002 dated March 29, 2000, with Enterprise Computing Solutions Technologies, Incorporated (ECS);
- obtained transcripts of a hearing pertaining to the timing of the restoration and production of EOP e-mail, held by the U.S. District Court beginning July 13, 2000, and observed the hearing sessions between July 31 and October 3, 2000; and
- obtained transcripts of hearings pertaining the EOP e-mail systems, held by the House Committee on Government Reform on March 23, March 30, May 3, and May 4, 2000.

To obtain additional information on the e-mail malfunctions and Office of the Vice President's e-mail records procedures that were not addressed by the Committee documents or hearing transcripts, the EOP stipulated that we submit written questions. We submitted seven sets of questions and reviewed the written responses and additional documentation provided, including two additional tape restoration project contracts: Vistronix, Incorporated, letter contract CI20C03 dated May 8, 2000; and TW and Company contract DC21C01 dated November 9, 2000. We also met with EOP officials to discuss specific issues pertaining to the restoration of the e-mail.

To determine costs for the project, we obtained copies of paid ECS invoices covering the period May 5 through September 5, 2000. We also obtained a copy of the July 28, 2000, Vistronix report that estimates project costs and compared this estimate to updated information regarding project status and actual costs incurred for the project through October 29, 2000, that we obtained from the EOP.

Our review of cost issues was limited by the unavailability of complete and reliable information. Specifically, we were not given access to OVP files of hard copy e-mail records, which impaired a full assessment of the OVP's

practices to preserve e-mail records. In addition, we were not provided complete documentation of contract performance assessments and related consequences for fiscal years 1998, 1999, and 2000; thus, we were unable to determine the extent to which the EOP documented contractor performance weaknesses and withheld award fees. Finally, we were not provided with copies of letters from the EOP to investigative bodies necessary for us to confirm that the EOP notified these entities of the e-mail malfunctions.

We performed our work from July 2000 through January 2001, in accordance with generally accepted government auditing standards.

Appendix II: Chronology of E-mail Malfunctions

Reference[a] documents	Date	Description of event[a]	Cross-reference to other documents listed in this table[a]	Comments[a]
E5346 through E5347, E5353 through E5354	07/94 and 10/94	E-mail from Nell Doering to various staff including Daniel Barry, James Wright, and others establishing an e-mail monitoring program that was implemented 07/25/94. The *Presidential and Office of the Vice President* (OVP) *Records Monitoring Plan dated* 10/28/94 that was attached provided a quarterly monitoring schedule through fiscal year (FY) 1995.		This monitoring program required that EOP agencies review a sample of record and nonrecord e-mail messages to ensure that proper record designation was applied by e-mail users.
E0595 through E0608	03/07/95	A document entitled *Automated Records Management System* (ARMS) for *Lotus Notes Mail* provided a technical description of the Notes/ARMS interface functionality. The document stated that the interface copies all internal and external e-mail and receipts to the ARMS records management database. White House Executive Office of the President (EOP) e-mail users may elect to remove the record designation of an outgoing mail message, which they created, by selecting a nonrecord command button. This option causes the message to not be captured as an official federal or presidential record to be archived in the ARMS records management database.	E5346 through E5347 and E5353 through E5354	Nonrecords were also captured temporarily by ARMS for sampling under EOP's records monitoring program to detect and correct improper designation of e-mail records.
E1115	08/29/96	The Mail2 server was created with the server name of Mail2 and User ID of Mail2/EOP.	E0564	
E0564 through E0566	10/29/96	E-mail stating that a Planning Research Corporation (PRC) contract employee installed the Mail2 server, as well as performed initial configuration of the Notes server. The Notes/ARMS interface Name and Address Book (NAB) was configured with five views.	Exhibit 125 and document E1115	PRC was the predecessor contractor to Northrop Grumman (NG) at the White House.
E2309 through E2310	02/25/97 and 02/26/97	Series of e-mail between Daniel Barry and Laura Crabtree regarding "… 'problem attachment' problem" whereby messages were deleted manually if they caused a problem with the Notes/ARMS interface.		Based on available documentation, this problem was not related to the Mail2 or Letter D malfunctions.
Exhibit 17	03/04/97	E-mail from Daniel Barry to John W. McGinnis asking him to write a paragraph regarding efforts performed to restore 10,000+ lost E-mail records. Mr. McGinnis' contribution would finish up Mr. Barry's "memo to the record."	The 3/23/00 hearing witness list lists Mr. Barry as Daniel "Tony" Barry. He was referred to as Tony in many e-mails and other documents.	Based on available documentation, this problem was not related to the Mail2 or Letter D malfunctions.

Reference[a] documents	Date	Description of event[a]	Cross-reference to other documents listed in this table[a]	Comments[a]
E2316 through E2323	03/06/97	Series of e-mails from Daniel Barry to James Wright and others regarding "missing Notes records." The problem occurred in September 1996 and caused some e-mail to be sent to the ARMS records management database without the message header. Other e-mails would be sent to the ARMS records management database without the message text. Mr. Barry stated he had received no training on Notes. He reported that to his knowledge, efforts to recover these missing e-mail messages in the beginning of 1997 were unsuccessful. According to this e-mail, between September 11 and 16, 1996 23,436 e-mail messages were missing headers (that is, "To," "Subject," etc.) and 10,138 messages were missing text.	Exhibit 17	Based on available documentation, this problem was not related to the Mail2 or Letter D malfunctions.
E6001 through E6004	03/17/97	Minutes of a staff meeting involving Jim Wright, Laura Crabtree, Karl Heissner, and others. Backup of EOP Information Systems and Technology Division (IS&T) servers was discussed. The minutes stated that "[r]equirements haven't been documented but approaches are being developed. An inventory does exist of what does need to be backed up." The minutes also question what the retention period should be, and stated that all types of server platforms "are being reviewed: VAX, client server, and mainframe."		
E6547 through E6558	03/21/97	E-mail to Ada Posey and others regarding restricted 1997 appropriation funding and that funds were needed for additional e-mail servers to relieve network strain. E-mail records management traffic was projected to increase 90 percent in FY 1998 from FY 1995's traffic rates. The e-mail noted that EOP's migration from Novell Netware-based network to Microsoft Windows NT began in May 1996. It also stated that the "…client/server backup system used to preserve data integrity and facilitate the archival of Presidential and Federal records has exceeded its life cycle [and can only] backup 50% of our file servers. However, due to hardware and software failures, less than 30% of our file servers have current backups. Currently, the only copy of data that is not backed up resides on each file server's physical hard drives. If any of those hard drives fail, data will be lost."	E1022, E1394, Exhibit 9	

Reference[a] documents	Date	Description of event[a]	Cross-reference to other documents listed in this table[a]	Comments[a]
E6005 through E6009	03/24/97	Minutes of a staff meeting involving Laura Crabtree, Nell Doering, Karl Heissner, Jim Wright, and others. The minutes discussed external e-mail, stating "Laura will have a report on the problems we've been having for Ada [Posey] tomorrow."		Based on available documentation, these problems were not related to the Mail2 or Letter D malfunctions.
E2379 through E2380	07/17/97	E-mail from Bruce Overton to Laura Crabtree and others with attached e-mail notice to all EOP mail users regarding implementation of Notes janitor agent. The janitor agent was set to move up to 300 e-mail messages that were greater than 45 days old from the "inbox" folder to the "trash" folder in the user's mail file. The messages were then automatically deleted 1 week later. The process was scheduled to run weekly beginning July 18, 1997. Mr. Overton asked whether the records management team had reviewed the janitor policy.		A 9/29/00 response to our question on this matter stated that "…. EOP does not believe that this 'janitor agent' was ever implemented." In its comments on a draft of this report, EOP stated that "… legal and records management staff never approved use of the agent."
E7209 through E7211	08/11/97	E-mail to Daniel Barry, Nellie Doering, Karl Heissner, Laura Crabtree, Ada Posey, and others containing minutes of a staff meeting. The minutes state that "Lotus Notes staff will be [coming] in to address the lost mail problem (we need a ruling from [counsel] as to issues with mail and as to what may be purchased)."		Based on available documentation, this problem was not related to the Mail2 or Letter D malfunctions.
Exhibit 49	01/30/98	A document created by Daniel Barry said that he noticed a potential problem with the capture of e-mail traffic coming into the EOP Lotus Notes system from the Internet. John Spriggs, the NG e-mail administrator, was asked to print out the firewall log to determine whether incoming Internet e-mail messages were received. The document stated "We are not sure where the problem lies at this point."	Exhibit 57	A computer directory location and date indicating 1/30/98 were handwritten on the document.
Exhibit 10	No date	A document containing May 16 meeting minutes discusses a problem with the Notes/ARMS interface scan process randomly skipping e-mail boxes on the Mail2 server. A random sample of e-mail boxes was analyzed and it was discovered that e-mails dating back to 1996 were not subject to records management, or captured by the ARMS records management database. The course of action was to further assess the problem.	Exhibit 12	

Reference[a] documents	Date	Description of event[a]	Cross-reference to other documents listed in this table[a]	Comments[a]
Exhibit 16	06/01/98	E-mail from Virginia Apuzzo to all EOP staff requesting that users delete unneeded e-mail on e-mail servers or save e-mail to individual workstations to prevent system failure. This message was repeated and re-sent to all EOP staff on 03/24/99 (Exhibit 16, page E0545).	E7202 through E7203	
Exhibit 12	06/12/98	E-mail from Robert Haas, NG contract employee, to Betty Lambuth, NG subcontractor, mentioning "a design flow in the Record Management design in Notes that would allow for certain types of mail document[s] to bypass record management."	Exhibit 10	The term "design flow" may be a typo of "design flaw".
Exhibit 50	06/18/98	A draft document entitled Lotus Notes to ARMS Interface Anomaly that was sent from the fax machine shared by the Office of Administration (OA) General Counsel and the OA Director to an unknown recipient. The draft described the Mail2 server malfunction and stated that the root of the problem stems from a discrepancy between the capitalization of the letters in the name of the affected Lotus Notes server. The problem was introduced by human error in capitalization of the server name letters in the affected users' e-mail accounts as "MAIL2" instead of "Mail2." The scope of the problem was that 526 users of Mail2 were affected.		
Exhibits 1 through 5	06/19/98	Memo from Virginia M. Apuzzo to John D. Podesta, former Deputy Chief of Staff, entitled Technical Anomaly in Automated E-Mail Records Management System, which describes the capitalization of the server name letters in the affected users' e-mail accounts as "MAIL2" instead of "Mail2" as the cause of the Mail2 malfunction. Exhibits 1 and 3 contained a handwritten note saying, "Chuck—I sent this memo to John this afternoon. Ginny" dated 6/19. Exhibits 4 and 5 contained a handwritten note saying, "Ginny Please ask Mark to brief me on this. Thanks, John."		Exhibits 1 through 5 were variations of the same memo. U.S. District Court testimony by Charles Ruff on 08/28/00 confirmed "Chuck" to be Charles Ruff, "Ginny" to be Virginia Apuzzo, and "John" to be John Podesta.
E0567 through E0569, E0573 through E0578, E0589 through E0594	07/09/98	Draft plan dated July 1998 and the undated finalized versions of the same plan to first process data records from Notes e-mail files to the VAX subsystem and then to restore Notes/ARMS interface processing on Mail2. The plan was to first turn the Notes/ARMS interface monitor task off, copy each affected user's existing mail file (containing the unrecorded mail) to the Notes/ARMS interface server, and then turn the Notes/ARMS interface	Exhibit 19	

Reference[a] documents	Date	Description of event[a]	Cross-reference to other documents listed in this table[a]	Comments[a]
		monitor back on for processing of unrecorded messages into the ARMS records management database. Once transferred, all documents would be marked as recorded and the syntax [capitalization of the server name letters in the affected users' e-mail accounts as "MAIL2" instead of "Mail2"] of the server name for the user's account would be corrected. Day-forward processing would resume on Mail2. The plan also noted that a "critical issue" existed for the processing of affected records from Notes to the ARMS records management database, which resides on the VAX subsystem. It stated that "preliminary investigation has shown that the date used to create the ARMS header files is the date that the messages are written to the Records Management mail-in database. This date doesn't reflect the true sent mail date in the original message."		
Exhibit 19	07/24/98	E-mail from Daniel Barry to James Wright noting under Additional activities that he continues to be involved in discussions regarding the Mail2 problem but there has been no movement thus far in correcting the problem or getting the data over to the ARMS records management database. The plan for fixing the problem had been submitted to EOP by NG.		
Exhibit 22	07/30/98	E-mail from Daniel Barry to James Wright with language similar to Exhibit 19.		
Exhibit 23	08/13/98	E-mail from Daniel Barry to James Wright expressing "concerns" about "the mail2 problem" or project X. He stated that there was no movement underway to fix the problem and recover the lost records from the backup tapes.	Exhibit 24	
Exhibit 24	08/13/98	E-mail from James Wright to Daniel Barry responding to his "concerns" e-mail saying that there has been some movement to get back on track and NG can develop a plan to get this effort going. "Certainly the Data Center and the Records Team has been left out of this matter and the result could be a great deal of work put upon us later." This exhibit stated that Kathleen Gallant informed Mr. Wright that a Paulette [Cichon] briefed Jim Welsh of NG to proceed with developing the plan.	Exhibit 23	

Reference[a] documents	Date	Description of event[a]	Cross-reference to other documents listed in this table[a]	Comments[a]
Exhibit 40	08/13/98	E-mail from Kathleen Gallant to James Wright with a copy to Daniel Barry. It stated that Jim Webster was taking Betty Lambuth's place and a meeting was held authorizing that it was okay to discuss the Mail2 project in detail with Mr. Webster. The e-mail stated that "I also agree with Tony [Daniel Barry] about the new searches that will have to be done. We need direction from OA counsel on that front."		
Exhibit 25	09/01/98	E-mail from Daniel Barry to James Webster, with a copy to James Wright, asking for a meeting to discuss the plan/approach on the Mail2 problem. An attached e-mail "Weekly" report dated 9/4/98 (E2016) says that Mr. Barry had a discussion with Jim Webster, NG, "regarding OVP E-mail and records management." Mr. Barry referred Mr. Webster to Kathleen Gallant for a decision to have all OVP users subject to records management through the ARMS records management database. The e-mail noted that a goods and services authorization request memo was prepared for 64GB disks for the Notes Mail2 recovery project. This will go to Financial Management Division (FMD) for signature and then make its way to the OA counsel.		
Exhibit 120	09/01/98, 09/15/98	E-mail from Daniel Barry to James Webster, NG, requesting meeting with him, Sandra Golas, Robert Haas, and John Spriggs to discuss the Mail2 problem and the plan/approach for proceeding. Webster forwarded Barry's e-mail to Spriggs, Golas, Robert Haas, and Yiman Salim, saying Barry wants "to set up a meeting to discuss our favorite issue.… I will tell Tony [Daniel Barry] that I will have to delay any meeting until we resolve some internal issues." On page E4015 of this exhibit, an e-mail dated 9/15/98 from Daniel Barry to James Webster about the Mail2 project meeting asks about Webster's plan for "righting the wrong" phase of this project. Barry wants to know when the meeting will occur.		
E5874	09/10/98	E-mail from Mark Bartholomew to Adam Greenstone [copy to Daniel Barry, Karl Heissner, Kathleen Gallant] regarding processing of incoming Internet e-mail to the President, Vice President, and the First Lady, referred to as White House "principals." Incoming e-mail to these principals was	E6020 through E6022	The bulk e-mail "package" was captured in the ARMS records management database.

Reference[a] documents	Date	Description of event[a]	Cross-reference to other documents listed in this table[a]	Comments[a]
		"packaged" into another e-mail to the correspondence office for each respective principal. These "packaged" e-mails, referred to as "bulk mail," were not subject to records management in the ARMS records management database message by message or as e-mail to the principal, but rather as bulk e-mail to the appropriate representative of the principal.		
Exhibit 26	09/10/98	E-mail from Daniel Barry to Kathleen Gallant and James Wright expressing concern about the lack of movement on the Mail2 problem. "We have known about this problem for 4 months now and not a single record [of the affected users] has been passed to ARMS...even worse, the root problem has not been fixed."		
Exhibit 64	09/14/98	Letter from Joseph Lucente noting "that in late May of this year, a dysfunction in the EOP e-mail system was detected by an employee..." of NG.		
Exhibit 27	09/25/98	E-mail from Daniel Barry to James Wright stating there was still no movement in the Mail2 problem and asking what his role was supposed to be in the project. Wright responds the same day saying that IS&T needs to start by providing NG with direction.		
Exhibit 47	09/25/98	E-mail from Kathleen Gallant to Daniel Barry stating that the Notes Anomaly Team has met and come up with a strategy. The team will back up Mail2 using a DLT [digital linear tape] drive that can verify as it writes and execute "the Notes agent changes to change all the [IDs] looking for Mail2 to MAIL2…." A second phase deals with reconstruction of the nonrecords-managed files from the Mail2 server. She said, "Contracts is aware of the whole mess, and supports the creation of the IWO [Internal Work Order]…."	E1235 and E1236	Agents are filtering instructions that automate operations on documents in a Notes database.
E1363 through E1375	09/30/98	A NG document entitled *Final Y2K Status Report for OA/IS&T* stated that the software for the ARMS records management database was not fully documented and controlled, and that it was "born very quickly in 1994 to meet an immediate need for the recording of message traffic." The C-language programs in the interface were not Year 2000-compliant.	E0766 and E1015 through E1021	Year 2000 readiness of information systems was a concurrent effort to repair e-mail malfunctions.

Reference[a] documents	Date	Description of event[a]	Cross-reference to other documents listed in this table[a]	Comments[a]
Exhibit 28	10/13/98	E-mail from Daniel Barry to Christina VanFossan and Joseph Kouba stating, "Per our meeting last week... here are 4 projects that I can see happening in the near term that are not currently budgeted for." The third project was listed as *Project X (Mail2) Reconstruction*, with an estimated cost of $250,000.		
E0766 through E0768	11/06/98, 11/12/98	E-mail created by Marvin Miller on 11/06/98 and revised 11/12/98 by Yiman Salim regarding an ARMS IWO feasibility and requirements study. The document stated that Notes and Notes Application Programming Interface (API) version 4.6 software was used in the Notes/ARMS interface. To perform maintenance on the ARMS software, the skill set required a C++ software engineer, a Notes developer with C++ and VAX knowledge, and a system administrator with Windows NT and Lotus Notes skills. The tasks listed in the e-mails included Year 2000 code modification and implementation of calendaring and scheduling modifications. However, in the 11/12/00 revision, Salim removed two tasks from Miller's list, including "Mail server name case sensitivity."	E1363 through E1375	"Name case sensitivity" refers to the capitalization of the server name letters in the affected users' e-mail accounts as "MAIL2" instead of "Mail2." In its comments on a draft of this report, EOP stated that the Mail2 case sensitivity was not related to Year 2000 efforts addressed by the "ARMS IWO."
Exhibit 30	11/12/98	E-mail from Daniel Barry to DeVere Patton saying that NG needs technical guidance on several items, including a response to the Mail2 IWO, which had not yet been finalized.	Exhibits 31 and 46	
Exhibit 31	11/13/98	E-mail from Daniel Barry to James Wright mentioning the response on the Mail2 IWO.	Exhibits 30 and 46	
Exhibit 121	11/16/98	E-mail from Daniel Barry to Sheryl Hall, John Spriggs, and Joseph Vasta requesting a meeting to discuss a course of action on moving the Mail2 reconstruction project forward.		
Exhibit 103	11/20/98	E-mail from Daniel Barry stating that Karl Heissner was the project manager for phases two and three of the Mail2 reconstruction work. The e-mail mentioned that phase one was the "…. fix (Stop the bleeding) on the mail 2 server." Phases two and three were not described in this e-mail.		

Reference[a] documents	Date	Description of event[a]	Cross-reference to other documents listed in this table[a]	Comments[a]
Exhibit 70	12/02/98	Weekly Contracting Officer's Technical Representative (COTR) meeting minutes for 11/20/98. NG commented that the Rough Order of Magnitude (ROM) "…could be plus or minus 20 percent"	Exhibits 63, 67, 72, 73, 75, and 122	
Exhibit 72	12/02/98	NG ROM for cost of IWO was $602,492.	Exhibits 63, 67, 70, 73, 75, 122, E1016	
Exhibit 122	12/02/98	E-mail from Daniel Barry to Karl Heissner stating that NG's ROM did not include the cost to do the restoration.	Exhibits 63, 67, 70, 72, 73, and 75	
E5783	12/04/98	E-mail from Moe Vela to "All Staff" requesting staff to delete unnecessary e-mail because "Lotus Notes is within 5 [percent] of maximum capacity and it will shut down at that time."		
Exhibit 63	12/11/98	Memo from Joseph Vasta to DeVere Patton, mentioning, in part, the Mail2 E-mail Reconstruction. Said NG would evaluate at least one tape.	Exhibits 67, 70, 72, 73, 75, and 122	
Exhibit 73	12/18/98	Weekly COTR meeting minutes for 12/16/98. "Government emphasized that before any work be undertaken, it is imperative that a tape inventory be done." NG insisted that an inventory in the absence of an automated tape management system would be very labor-intensive (over 1 hour per tape) and "would far exceed the services in the Base Services IWO."	Exhibits 63, 67, 70, 72, 75, and 122	
Exhibit 67	12/23/98	Weekly COTR meeting minutes for 12/23/98. NG reported that a recent tape was restored, and the universe of tapes was identified as 788.	Exhibits 63, 70, 72, 73, and 122	
Exhibit 32	12/24/98	E-mail from Daniel Barry to Joseph Kouba. It lists three tiers of projects related to the decisions resulting from the Armstrong court case. The third tier includes projects that, in his opinion, could be done but were not vital. The Mail2 reconstruction (Project X) was listed in the third tier, showing an FY 1999 cost of $650,000 and an FY 2000 cost of $1 million.		The Armstrong court held that EOP components must capture electronic records subject to the Federal Records Act.
Exhibit 129	01/06/99	Weekly report from Daniel Barry in which he stressed that OA Counsel needed to be in the decision-making process regarding projects that should move forward, such as Project X.		
E6020 through E6022	01/07/99	Meeting agenda and handwritten meeting notes regarding "records disposition for internet e-mail." It stated that for e-mail to "… 'President @whitehouse.gov,' all emails [were] combined into one and sent to [the President's bulk e-mail	E5874	

Reference[a] documents	Date	Description of event[a]	Cross-reference to other documents listed in this table[a]	Comments[a]
		representative].” It was packaged and sent on to the ARMS records management database where it was retained as e-mail to the President’s bulk e-mail representative.		
E5784	01/13/99	E-mail from Moe Vela to “All Staff” requesting staff to delete unnecessary e-mail and databases in Lotus Notes because the IS&T anticipated running out of disk space in about 1 hour.		
E0772	02/01/99	E-mail from Daniel Barry about “the effort underway to locate and document the [Notes/ARMS] interface code so that changes can be made.”		
E0964	02/01/99	E-mail from Daniel Barry to Raul Cavazos stating that “…. the ARMS processing requested a tape from March 1997 and Ops [Operations] was unable to find the tape.” Concludes, “there needs to be an inventory of the ARMS tapes that are stored in the boxes in the back of the DC [data center], to make it possible to retrieve any one of the tapes.”		
Exhibit 75	02/02/99	Weekly COTR meeting minutes for 01/27/99. The EOP asked about NG’s tape inventory and tape tracking methodology. The EOP requested a tape inventory (that included tape ID, volume, dataset ID, etc.) from October 1997, the point when NG was awarded contract.	Exhibits 63, 67, 70, 72, 73, and 122	
Exhibit 81	02/05/99	Memo from Karl Heissner explaining the Mail2 server problem. He stated that “the problem, that some e-mail messages were not records managed properly, was discovered in February 1998, and Mr. Barry immediately notified the Lotus Notes Group (NG-Spriggs/Golas) as well as IS&T Management of the problem.”	Exhibits 82 and 83	
Exhibit 43	03/12/99	E-mail from Nellie Doering to Dorothy Cleal, copy to Daniel Barry, suggesting changes to Mr. Barry’s proposal. Ms. Doering stated that Mr. Barry agreed to ensure the “Server 2” tapes were properly inventoried and documented by NG.		
Exhibit 37	03/18/99	E-mail from Daniel Barry to DeVere Patton, Karl Heissner, and Nellie Doering about the Mail2 records management problem. Barry stated that: “It has come to my attention that when the ‘bleeding’ was stopped on MAIL2 in November 1998, ALL the bleeding may NOT have been stopped. I have spoken with John Spriggs and it appears as though at least one account,		

Reference[a] documents	Date	Description of event[a]	Cross-reference to other documents listed in this table[a]	Comments[a]
		MILLENNIUM, may still have the problem. I believe NG should be instructed to investigate and report back on exactly what the situation is with regard to the MAIL2 problem."		
Exhibit 41	03/18/99	A series of e-mails noting that the Mail2 problem was not allowing EOP staff to recycle backup tapes. Nellie Doering stated that the tapes need to be inventoried by NG and "…. 'secured' so that they are easily identified as the Server 2 Backup Tapes that were not [subject to records management.]" DeVere Patton stated that "…it is something that NG should be doing under the base contract [in response to Dorothy Cleal's inquiry regarding contract scope].		
Exhibit 42	03/18/99	E-mail from Joseph Kouba to Daniel Barry and others stating, "looks like MAIL 2 reconstruction is back on hold until some additional confirmation is received."		
Exhibit 124	03/19/99	E-mail from Karl Heissner to Nellie Doering, Daniel Barry, and Mark Bartholomew. Meeting minutes to discuss the Mail2 reconstruction. It stated that the project was on hold awaiting approval of the OA counsel.		
E0812	03/24/99	E-mail from Michael Ritter to Joseph Vasta regarding tape inventory. It stated that "there are between 700 and 800 tapes [in] mostly 8-mm [millimeter] format and do not have a 'header' catalogue (meaning that the entire tape must be read to develop a directory list)." Also, "there is a short period of a few months where we do not have backup tapes due to changes in the governments requirements." Mr. Ritter estimates that under "perfect conditions" it would take 1.5 to 3 hours per tape to read the tape and print the catalogue information; however, he stated, the tapes were old and were produced under various hardware and software configurations. He stated that "it is expected that there will be tapes that cannot even be read with the current hardware on site."		
E1255 through E1256	03/25/99	NG memo from Joe Vasta to DeVere Patton regarding Mail2 backup tapes. It stated that NG will secure Mail2 backups for October 1996 through November 1998 and provide minimal inventory information. The memo identified that during this period, NG was instructed by "the government" to reuse backup tapes causing		

Reference[a] documents	Date	Description of event[a]	Cross-reference to other documents listed in this table[a]	Comments[a]
		some to be overwritten. The memo stated that a report detailing a description of the system failure was beyond the scope of the base contract.		
Exhibit 117	04/01/99	E-mail from Michael Ritter to Yiman Salim, Robert Haas, John Spriggs, and Sandra Golas asking them a series of questions about when the Mail2 server problem started and when it was resolved. He requested responses from each by 4/2/99.	E0833 and E0834	
E1194	04/01/99	E-mail from Benjamin Kirby to Adam Greenstone, Daniel Barry, others, stating the millennium account was not subject to records management.		
Exhibit 66	04/02/99	E-mail from Yiman Salim to Michael Ritter about the Mail2 issue. She stated that NG personnel became aware of the Mail2 problem on June 12, 1998, and that the cause of the problem, writing Mail2 as MAIL2, was identified a couple of days later by John Spriggs. She also noted that the problem was inherent in the ARMS process because it "is currently enforcing server name case sensitivity." The message also stated that in December 1998 NG initiated a task to baseline the Notes/ARMS interface program. Completion was scheduled for April/May 1999, after which programming changes could be made as needed.	Exhibit 117	
Exhibit 71	04/02/99	E-mail from Michael Ritter to Joseph Vasta. This e-mail explains the Mail2 server problem in detail. It also mentions that NG staff have identified a similar problem on MAIL1 that was also caused by human error. The message stated that an employee of the contractor PRC designed a program to migrate user accounts to the Notes server, and this program entered the users with the improper server name syntax.		
Exhibit 44	04/09/99	Meeting notice from Karl Heissner about records management of all Mail2 and MAIL1 server accounts. This notice stated that Mail2 and MAIL1 servers still contain "unrecordsmanaged" accounts, preventing the recycling of backup tapes. The objective was to make necessary corrections by April 18.		

Reference[a] documents	Date	Description of event[a]	Cross-reference to other documents listed in this table[a]	Comments[a]
Exhibit 125	04/09/99	Series of e-mails describing Letter D malfunction. Marvin Miller e-mails to Robert Whiteman and Yiman Salim that the Letter D malfunction was caused in 11/98 when NG was correcting a Lotus Notes buffer overflow system failure. The user accounts (sorted by first initial/last name) were distributed among five Notes/ARMS interface e-mail server views, so that all 26 letters of the alphabet were assigned to one of the 5 views. "The letter 'D' was inadvertently omitted and the letter 'J' was added twice." This caused all users on all e-mail servers whose first names began with D to not be subject to records management.	Exhibits 13, 79, documents E3218, E3219 through E3221, and E3222 through E3229	
E3219 through E3221	04/15/99	Memo from Robert Whiteman (NG) to Dorothy Cleal describing events regarding the Letter D malfunction. It stated that a Notes/ARMS interface e-mail server system failure occurred in November 1998, which was caused by a configuration error. In correcting the failure, NG reconfigured the Notes/ARMS interface views on Lotus Notes e-mail servers and "inadvertently omitted" the letter D from the views, causing incoming non-Notes e-mail for users with first names beginning with D not to be subject to records management. According to the memo, the Lotus Notes team reported this to NG management on 04/09/99. Mr. Whiteman recommends not recycling tapes until the problem was resolved and to include the saved tapes in the ongoing e-mail recovery effort.	Exhibit 79, documents E3218, and E3222 through E3229	
E3218	04/15/99	Memo from Dorothy Cleal, through Michael Lyle, to Mark Lindsay regarding the Letter D. The memo stated that 191 users were affected and who have not had e-mail records-managed since November 1998. Cautions that "…records management problem may not be limited to this particular error."	Exhibits 13 and 79; documents E3218, E3219 through E3221, and E3222 through E3229	
Exhibit 79, E3222	04/15/99	Cover memo from Eric Ritter to Dorothy Cleal with attached listing that shows the 191 users impacted by the Letter D malfunction—54 on MAIL1, 77 on Mail2, 29 on MAIL3, 30 on MAIL5, and 1 on RDS1.	Exhibits 13, 125; documents E3218, E3219 through 3221, and E3222 through E3229	
Exhibit 99	04/20/99	This e-mail from Joseph Kouba stated that a "legal determination [was needed] that reconstruction is required by the court case and that this is a legitimate use of Armstrong funds."		

Reference[a] documents	Date	Description of event[a]	Cross-reference to other documents listed in this table[a]	Comments[a]
E7265 through E7268	04/28/99	E-mail from Robert Whiteman to Marvin Miller, Robert Haas, Yiman Salim and others requesting review of Lotus Notes self evaluation for 10/98 to 04/99. It stated that Notes staff began analysis phase of the Notes/ARMS interface task. During this analysis, staff identified a records management problem (Letter D malfunction) and were researching viable solutions.		
E1235 and E1236	05/17/99	Report explaining e-mail audit agents that run on Notes servers and search for unrecorded mail and incorrect mail templates. It recommends running audit agents weekly and providing logs to Mr. Barry. It also recommends resuming tape recycling. It stated that "it would not be possible to recycle any back-up tapes that were created prior to the (managed date) completion of the correction and verification of the system…".	Exhibit 47	
Exhibit 38	05/21/99	E-mail from Michael Ritter to Albert Leister regaining the Mail2 Statement of Work (SOW). "This is actually from September '98. Still no action on…or response from…the gov't."		
Exhibit 118	05/21/99	E-mail from Albert Leister Jr. to Dorothy Cleal stating that the "…backup tapes are in the DC [data center]."		
E0793	05/21/99	E-mail from Marvin Miller showing a schedule to run various Notes agents. One scheduled for 05/25/99 was to "fix letter 'D' and letter case problem. Records will be managed from this point on."		
E4483	06/04/99	E-mail from Albert Leister to Dorothy Cleal reporting that the Notes audit agents indicate all documents requiring records management were managed properly and the agents run weekly "…. to insure no new errors surface." The e-mail noted that audit logs were given to Karl Heissner and requests personal direction to resume tape recycling.		
E0798	06/09/99	E-mail from Yiman Salim stating that "…the [Notes/ARMS interface] views, in the Name and Address Book, need to be modified to make the selection criteria non-case sensitive." The Notes/ARMS interface scanning process had skipped a user account (that was not in use) because the name started with lower case. "A CMC [configuration management change] has been submitted to implement this modification."		

Reference[a] documents	Date	Description of event[a]	Cross-reference to other documents listed in this table[a]	Comments[a]
Exhibit 6	01/13/00	Briefing materials for 1/19/00 meeting with the National Archives and Records Administration regarding e-mail issues. It mentions Mail2 and Letter D configuration issues. It stated that Mail2 affected 526 users and Letter D affected about 200 users.		
Exhibit 130	01/21/00	Chronology of Mail2 server events and impact, labeled "Tony" in upper right-hand corner. It discusses the problem and plan of action. It also identified the magnitude of e-mails being researched as encompassing 850 tapes, and that some tapes contain classified data. The plan of action says that Enterprise Computing Solutions Technology, Incorporated (ECS), an 8a firm, has prior experience and was currently on-site for the Armstrong effort.		
E4337 through E4338	02/01/00	E-mail from Daniel Barry to Michael Sullivan with comments on an attached draft request for proposals (RFP) for NG to bid on recovery of lost e-mails. Barry comments that a subcontractor to Information Management Consultants, Incorporated (IMC), had developed the original Notes/ARMS interface code in 1996. The e-mail stated that the Notes/ARMS interface transitioned to NG in 1997/1998. The system broke in late 1998 because it could not handle increased user population when migrating from All-in-1 [the previous e-mail system] to Notes, causing the Letter D problem. The RFP requests a proposal from NG by 02/15/00, and stated that NG caused the problem and that "…corrective action should be at no-cost to the Government." Barry asks if it was "fair and equitable" to hold NG accountable for fixing bugs in the software developed by the IMC subcontractor.	E5978 through E5979	
E1393	02/25/00	Handwritten notes stating that some tapes included in the tape recovery effort were classified as confidential or secret.		
E1394	02/25/00	Handwritten notes of an interview about "Bob's – Mail issue," which state that backup problems were experienced due to going from a File Allocation Table (FAT) system to a Windows NT File System (NTFS). An accompanying timeline shows the backup problem existed from the beginning of the Mail2 problem (10/96) until about 11/97.	Exhibit 9, E1022, and E6552	

Reference[a] documents	Date	Description of event[a]	Cross-reference to other documents listed in this table[a]	Comments[a]
E3237	No date	Document entitled *Tape Reconstruction Procedure Outline* stated that 850 tapes were involved in the recovery effort.		
E4349 through E4354	02/29/00	*Ontrack Computer Evidence Services' Statement of Work and Proposal for Services* proposes a cost of $436,000 plus expenses and 55 days to copy and catalog 800 tapes at the EOP, which would require acquisition of 11 computers. It would cost $348,000 and 55 days to perform the work at Ontrack's facility, which was fully equipped. Pricing for data recovery varied depending on four categories of optional services.		
E3247 through E3248	03/01/00	E-mails between John Spriggs, Albert Leister, Terrence Misich, and William Burkey regarding backup tapes. Magnitude of tapes revised by Burkey to 3,391, including 283 "miscellaneous tapes." Spriggs stated that "we really do not have any good evidence of what backup [device] was actually backing up Mail2 on any given date." Leister identified three boxes of tapes containing 1,006 8-mm tapes and 51 DLTtapes as definite to search and identified another three boxes containing 503 8-mm tapes as "possible," for a total of 1,560 tapes. The tapes consist of 4-mm, 8-mm, and DLTtape media spanning intermittent periods from 1/96 to 6/99. The tapes reportedly contained backup of Office of Management and Budget (OMB), White House Office, and other EOP agency servers, including Mail2.		
Exhibit 46	No date	Timeline for ARMS-related activities (Development Tasks, Problem Discovery and Problem Fixing). It lists the Mail2 problem as discovered on 6/12/98 and fixed on 11/22/98. The Letter "D" was problem discovered on 4/9/99 and fixed on 6/1/99.		
Exhibit 9	No date	Draft *Talking Points on the Mail2 Server Anomaly* stated that incoming e-mails exist on backup tapes, "…except for a small window of time from 8/96—11/97 when, due to a glitch in the backup software, the mail files may not have been backed up on a consistent basis."	E1022, E1394, and E6552	
E1040 through E1041	03/10/00	Memo from Terrence Misich to Jack Young, General Counsel/OA. It stated that he "visually	E1015 through E1021	

Reference[a] documents	Date	Description of event[a]	Cross-reference to other documents listed in this table[a]	Comments[a]
		scanned 14 boxes of magnetic media, containing 3,391 magnetic tapes of various types" and that a number of tapes do not have external labels and some may have erroneous external labels. Mr. Misich recommends the performance of the first phase of the Tape Restoration Plan.		
Exhibit 13	03/14/00	Cover note from Yiman Salim with attached audit log files from May 8 and 9, 1999, for EOP mail servers Mail2 and MAIL1 showing unrecorded documents. According to the logs, in May 1999, both Mail2 and MAIL1 had four user accounts each with server name syntax errors causing unrecorded mail dating back to 1997. The logs also show 126 users affected by the "Letter D" malfunction (70 on Mail2 and 56 on MAIL1).	Exhibits 37, 44, 71, 79 and 125.	Logs show that about 5 months after the Mail2 fix was implemented, Mail2 still had four user accounts with syntax errors and unrecorded mail dating back to 1997-1998. Also, MAIL1 had four user accounts with syntax errors in this same time frame.
E1015 through E1021	03/15/00	A document *entitled Draft Tape Restoration Plan* revised to include new data from ECS. It stated that 3,391 tapes were involved in the recovery effort and attributes the Letter D malfunction to a "…software failure." It also attributes the Mail2 malfunction to case sensitivity. It stated that "work associated with this data recovery began almost as soon as the problem was discovered." The draft plan mentioned that the work was not begun in October 1998 when the SOW was developed for NG because of Year 2000 efforts, so the recovery was postponed to March 2000. In February 2000, OA "…began exploring alternatives," and received an estimate from one company of $436,000 and 55 days to extract mail from 850 tapes. The draft plan extended these estimates to $1,744,000 and 220 days for 3,391 tapes. The draft plan also stated that another vendor, familiar with ARMS, estimated $3,286,596 and 1.7 years.	Exhibit 72, E1363 through E1375, and E0776	
E1022	No date	Hand-drawn timeline of e-mail malfunctions. Shows October 1996 to October 1997 "backup tapes missing, FAT to NSF file...Fixed." August 1998 "ARMS research to fix Mail2 – discover they cannot." November 20, 1998, Mail2 stop bleed, tape recycling starts November 21. April 9, 1999, D problem identified, stopped tape recycle. May 21, 1999, "stopped D-bleed".	E1394, E6552, and Exhibit 9	In its comments on a draft of this report, EOP stated that "…. tapes were not recycled from June of 1998 until June of 1999."

Reference[a] documents	Date	Description of event[a]	Cross-reference to other documents listed in this table[a]	Comments[a]
Exhibit 57	03/17/00	Fax from Beth Nolan, White House Counsel, to The Honorable Dan Burton, stated, "In January 1998, Daniel Barry.…noticed a possible anomaly within ARMS...that some incoming e-mails might be missing.…Mr. Barry notified his superiors and documented his finding...The full extent of the error causing the anomaly Mr. Barry noted was not discovered until June 1998, when NG employees discovered….certain incoming e-mail messages that were coded as "unrecorded".…The contractor notified IS&T personnel….By the fall of 1998, NG technical personnel working with IS&T staff discovered that the problem was due to miscoding 'Mail2' as 'MAIL2.' They further determined that the miscoding affected 526 ARMS-managed accounts.... By November 1998, the NG and IS&T personnel had corrected the problem...." prospectively "...incoming e-mail to ARMS-managed accounts with the first names beginning with the letter 'D' had not been recorded by ARMS since November 1998. It appears that this error remained undetected until April 1999...." Approximately 200 accounts within EOP were affected. "In the course of gathering these preliminary facts concerning these configuration errors, we were informed this week that e-mails on the server of the Office of the Vice President (OVP) have not been fully managed by ARMS."	Exhibit 50	

[a]References are to the House Committee on Government Reform exhibits used at the March 2000 hearings; additional documents provided to the Committee are identified by an "Exxxx" scheme. Bracketed items within the "Description of Event" column and the "Comments" column have been added by us for readability and clarification.

Appendix III: Key Officials Involved in Primary Mail2 and Letter D Events

Executive Office of the President Federal Staff, October 1996 Through June 1999:

Virginia Apuzzo, former Assistant to the President for Management and Administration

Daniel A. "Tony" Barry, Computer Specialist, Office of Administration (OA)/Information Systems and Technology Division (IS&T)

Mark Bartholomew, Web Development, OA/IS&T

Paulette Cichon, former Deputy Director, Information Management, OA

Dorothy Cleal, former Associate Director, OA/IS&T

Laura Crabtree, former Desktop Systems Branch Chief, OA/IS&T

Nellie Doering, Records Management, OA/IS&T

Kathleen Gallant, former Associate Director, OA/IS&T

Sheryl Hall, former Computer Specialist, OA/IS&T

Karl Heissner, Systems Integration and Development Branch Chief, OA/IS&T

Joseph Kouba, Budget Analyst, Financial Management Division

Mark Lindsay, Assistant to the President for Management and Administration, former General Counsel, OA, and former Director, OA

Michael Lyle, Director, OA, and former General Counsel, OA

Cheryl Mills, former Deputy Counsel to the President

Terrence Misich, Chief Warrant Officer 5, U.S. Army, on detail from White House Communications Agency to OA/IS&T, Tape Restoration Project Manager

Beth Nolan, Counsel to the President

Bruce Overton, Deputy General Counsel, OA

DeVere Patton, Contracting Officer's Technical Representative (COTR) for the Northrop Grumman Contract

John Podesta, Chief of Staff

Ada Posey, former Director, OA

Charles Ruff, former Counsel to the President

Michael Sullivan, Deputy Associate Director for General Services Division, OA

Christina VanFossan, Director, Financial Management Division

James Wright, former COTR for the Northrop Grumman contract, and Data Center Branch Chief, OA/IS&T

Northrop Grumman Contract Staff From Contract Award in October 1997 Through June 1999:

Sandra Golas, VAX System Administrator

Robert Haas, Lotus Notes E-mail System Administrator, Lotus Notes team

Steve Hawkins, former Project Manager

Betty Lambuth, CEXEC (a subcontractor to Northrop Grumman), former Lotus Notes team manager

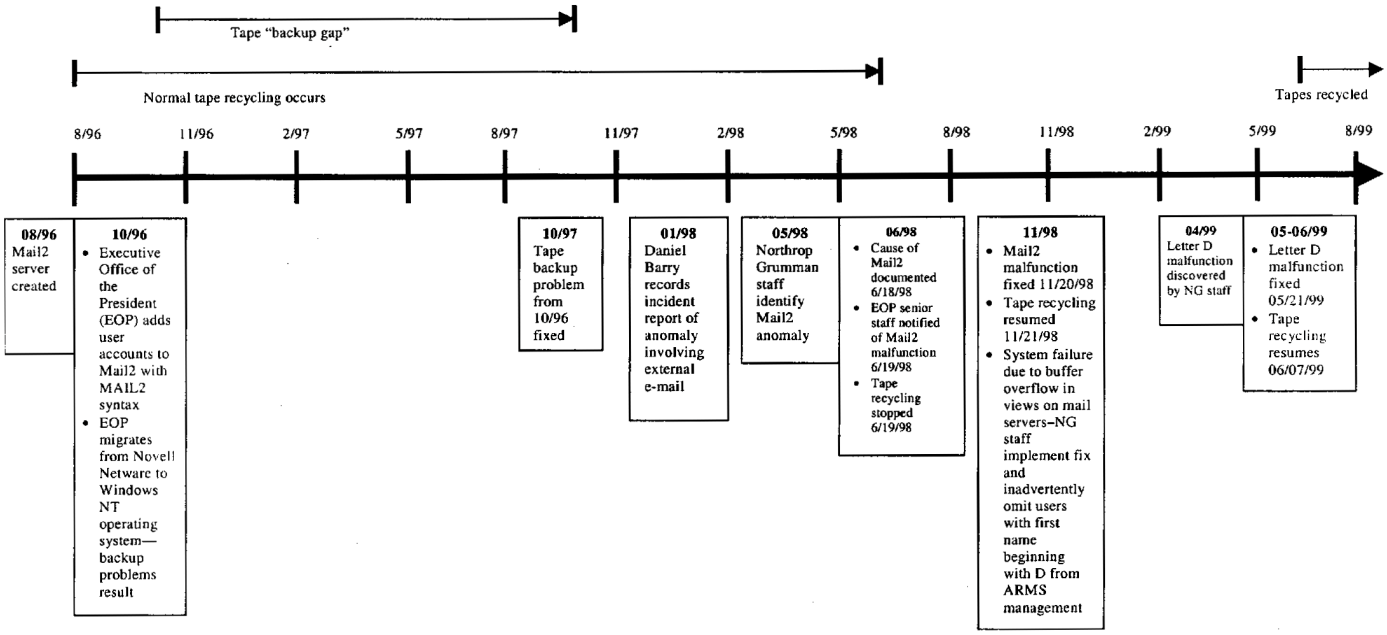
Joseph Lucente, Director of Contracts and Subcontracts

Yiman Salim, Lotus Notes Developer, Lotus Notes team

John Spriggs, Senior Engineer

Joseph Vasta, former Program Manager

Appendix IV: Time Line of Key Events in the Mail2 and Letter D Malfunctions



Source: GAO compilation of documents provided by EOP to the House Committee on Government Reform.

Appendix V: Itemization of Budgeted Cost for the Tape Restoration Project

Cost element	Description	Estimated cost
ECS contract:	Restoration of e-mail messages not recorded in ARMS	
Phase I	Task 1: Develop a detailed project plan	$ 836,600
	Task 2: Define, configure, acquire, and install required equipment	862,300
	Task 3: Develop a quality assurance and quality control program for the project	217,600
	Task 4: Develop, test, and refine tape recovery software	742,600
	Task 5: Test and validate recovery plan and software	128,400
Phase II	Task 6: Receive and inventory all tapes	118,000
	Task 7: Make two copies of each tape	364,000
	Task 8: Place original tapes in secure custody	31,000
	Task 9: Scan duplicated tapes into message recovery system	337,000
Phase III	Task 10: Process e-mail into searchable database	92,400
	Task 11: Remove duplicate e-mail messages and prepare for transfer to ARMS	93,000
	Task 12: Place duplicate e-mail messages into a searchable database	105,400
	Task 13: Process classified tapes as above	208,000
	Task 14: Deliver final products	80,000
	General and administrative expenses and other direct costs	909,529
ECS total:		**$5,125,829**
Vistronix contract:	Independent validation and verification of tape restoration	
Phase I	Tasks 1 through 5 (see above)	$ 465,483
Phase II	Tasks 6 through 9 (see above)	1,078,233
Phase III	Tasks 10 through 14 (see above)	450,103
Vistronix total:		**$1,993,819**
Other costs:	Other restoration costs	
AAC Associates contract	Advice on recovery of OVP e-mails	$900,000
Vendor not determined	Forensic analysis and recovery of broken or unreadable tapes	2,092,400
Vendor not specified	Additional hardware, software licenses, and 12,000 tapes for two sets of tape copies	498,480
Not applicable	Project overrun contingency	1,098,891
Other costs totals		**$4,589,771**
Total		**$11,709,419**

Source: Tape restoration project cost estimate report prepared by Vistronix, Incorporated, for the EOP in July 2000.

Appendix VI: Comments From the Office of the Former Vice President

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

OFFICE OF THE FORMER VICE PRESIDENT
THE HONORABLE AL GORE

April 11, 2001

Mr. Joel C. Willemssen
Managing Director
Information Technology Issues
U.S. General Accounting Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Willemssen:

Enclosed please find the comments of the Office of Former Vice President Al Gore on the General Accounting Office (GAO) draft report entitled *Electronic Records: Clinton Administration's Management of Executive Office of the President E-mail System* (hereinafter "the Report").

I was not principally responsible for the information flow related to GAO's inquiry into EOP e-mail management during the former administration. Therefore, I have compiled the following comments in consultation with members of the former administration who were responsible for preparation of responses to the GAO inquiry. The comments below are divided into two sections: "General Commentary" and "Line by Line Commentary."

General Commentary

While the Report chronicles several miscommunications among EOP components related to e-mail system support and records management, it fails to state explicitly that there is absolutely no evidence of any attempt by OVP or EOP personnel to deliberately fail to preserve any documentary material or inappropriately withhold information from any investigative body. Considering the nature of some of the allegations that have been made in relation to this matter, the interests of fairness dictate that this fact should be made explicit.

Another point that does not come through in the current draft of the Report relates to the ARMS system. ARMS did not exist before the EOP contracted to have it created early in the former administration. While EOP and OVP personnel may have come to know that ARMS was searchable, ARMS was not created for this purpose. ARMS was created to capture and preserve e-mail as a method of compliance with the Federal Records Act (FRA) for EOP components governed by it. ARMS was not used as a subpoena and document request compliance tool until sometime much later in the administration. The ARMS system was *sui generis* and, therefore, it would be difficult to

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measure technical problems integrating new EOP components and software systems into ARMS against "best practices." Best practices, as they relate to the unique ARMS system, continue to evolve. In fact, the former administration's experiences with ARMS, some of which are chronicled in this Report, should serve to help develop the best practices as they relate to ARMS technology and its intersection with the Presidential Records Act (PRA) and the FRA.

Line by Line Commentary

The following is a list of specific textual changes urged by the Office of the Former Vice President to be incorporated into the final Report. Each comment in this section begins with a location of the text in question in a parenthetical. **Bold** typeface denotes recommended textual insertions and ~~strikethrough~~ typeface denotes recommended textual deletions.

Now on p. 1.
See comment 1.

(First p. 2, ¶ 1, 2nd sentence) To be accurate, the sentence should read: "...require the EOP to preserve **certain** official records, including e-mail **qualifying as presidential or vice presidential records**."

Now on p. 1.
See comment 2.

(First p. 2, ¶ 1, 3rd sentence) The PRA does not require that presidential records are "available for use in the course of official duties." Rather, the PRA requires that presidential records be preserved and transferred to the custody of the Archivist of the United States upon the termination of the President and Vice President's term in office. See 44 U.S.C. Chapter 22.

Now on p. 2.
See comment 3.

(Second p. 2, carryover ¶) GAO requested to physically inspect randomly sampled paper files within the OVP on the week of December 11, 2000. This request either misunderstood that the OVP did not have a central filing system for printed out e-mails or it was an overly broad request to review OVP files without regard to any specific subject matter. These OVP objections were raised with GAO through then-OA personnel at the time yet GAO made no effort to refine its request or explain why its original request served a properly circumscribed purpose.

Now on p. 2.
See comment 4.

(Second p. 2, 1st full ¶) As discussed in the "General Commentary" section, while ARMS is searchable, it was not created for that purpose.

Now on p. 2.
See comment 5.

(Second p. 2, 2nd full ¶) As discussed in the "General Commentary" section, "best practices," as they relate to the unique ARMS system, continue to evolve.

Now on p. 2.
See comment 6.

(Second p. 2, 2nd full ¶, 3rd Sentence) To be accurate, the sentence should read: "The OVP discontinued this approach at some point after May 1993—in the mistaken belief that the e-mail records were being archived in ARMS and that ~~another~~ **IS&T, the division of the Office of Administration that performed that function for other** EOP components**,** was managing the backup tapes."

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Now on p. 2.
See comment 7.

(Second p. 2, 2nd full ¶, 4th sentence) To be accurate, the sentence should read: "The OVP could not demonstrate that **all** e-mail records…"

Now on pp. 2 to 3.
See comment 8.

(Second p. 2, 2nd full ¶, 5th sentence) To be accurate, the sentence should read: "As a result, about 600 system backup tapes needed restoration to determine if any **non-archived** e-mail records existed on the tapes."

See comment 9.

(p. 3, 2nd full bullet point) To be accurate, the sentence should read: "Legal **and Congressional** scrutiny of the e-mail malfunctions…"

Now on p. 4.
See comment 10.

(p. 3, 1st full ¶ in "Background" section, 1st sentence) To be accurate, the sentence should read: "…adequately record their official acts, maintain ~~all such~~ **certain official** records, and transfer custody of such records…"

Now on p. 5.
See comment 11.

(p. 4, footnote 1, second sentence) We do not agree with the assertion that "system backup tapes are not to be used for recordkeeping purposes." Upon what authority does GAO base this assertion?

Now on pp. 5 to 6.
See comment 12.

(p. 4, 1st full ¶ following bullet points) This paragraph does not make it clear that the FRA does not apply to the Office of the Vice President. Certain official records generated by the Office of the Vice President are subject to the PRA. See 44 U.S.C. § 2207. Therefore, as it relates to the assertion in footnote 2, OVP vice presidential records were transferred to the custody of IS&T for the limited purposes of e-mail system administration and records management and those records did not become federal records at any time. For example, vice presidential e-mail records in the custody of IS&T for these limited purposes were not subject to the Freedom of Information Act requests, whereas OA federal records were so subject.

Now on p. 7.
See comment 13.

(p. 5, 4th full ¶ in "History Surrounding…" section, 5th sentence) This sentence fails to recognize that ARMS was not created for the purpose of subpoena compliance. Therefore, to be accurate, the sentence should read: "The ARMS database maintained e-mail records in a searchable format **which came** to ~~support~~ **facilitate** EOP's responses to document requests and subpoenas **sometime much later in the administration**.

Now on p. 9.
See comment 14.

(p. 7, 2nd full ¶ in "The OVP Did Not…" section, 1st sentence) To be accurate, the sentence should read: "During **a portion of** the administration, the OVP was responsible…"

Now on p. 10.
See comment 15.

(p. 7, 2nd full ¶ in "The OVP Did Not…" section, 3rd sentence) To be accurate, the sentence should read: "However, the OVP **and IS&T** did not **effectively** communicate ~~its requirements~~ **which office was responsible** for management of ~~its~~ OVP e-mail records and the **OVP then** assumed that records management responsibility also transitioned to the Office of Administration **as was true for other EOP components**."

Now on p. 10.
See comment 16.

(p. 7, 2nd full ¶ in "The OVP Did Not…" section, 4rd sentence) To be accurate, the sentence should read: "~~According to the EOP~~ **Likewise**, the Office of Administration…"

Comments on the GAO E-mail Report
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Now on p. 10.
See comment 17.

(pp. 7-8, carryover sentence) To be accurate, the sentence should read: "This mistaken belief was based on the precedent that ARMS managed e-mail records for all other EOP components since its implementation in 1994, **on the fact that searches of ARMS produced OVP e-mail records, and on the observation that some outgoing OVP e-mails were in fact being ARMS managed**."

Now on p. 10.
See comment 18.

(p. 8, in between the 2nd and 3rd full sentences) This paragraph would be more accurate if the following sentence were added: "**These records, however, are being restored as part of the Tape Restoration Project.**"

Now on p. 10.
See comment 19.

(p. 8, 3rd full sentence) GAO requested to physically inspect randomly sampled paper files within the OVP on the week of December 11, 2000. This request either misunderstood that the OVP did not have a central filing system for printed out e-mails or it was an overly broad request to review OVP files without regard to any specific subject matter. These OVP objections were raised with GAO through then-OA personnel at the time yet GAO made no effort to refine its request or explain why its original request served a properly circumscribed purpose.

Now on p. 10.
See comment 20.

(p. 8, 1st full ¶, 1st sentence) To be accurate, the sentence should read: "Although the OVP did not continually retain paper copies of **some** e-mail records **not captured by ARMS** in accordance with EOP policy…"

Now on p. 10.
See comment 21.

(p. 8, 1st full ¶, 2nd sentence) To be accurate, the sentence should read: "According to the EOP, however, because ~~these~~ **OVP** backup tapes were **retained** for system recovery and ~~not~~ records archival **only**, they were not in a text-searchable format."

Now on p. 11.
See comment 22.

(p. 8, 2nd full ¶, last sentence) To be accurate, the sentence should read: "However, **because** the OVP **and OA IS&T miscommunicated during the transfer of operation and maintenance of the OVP e-mail system** ~~did not ensure the preservation of e-mail records, in paper electronic form~~, presidential records may have been irretrievably lost."

Now on p. 11.
See comment 28.

(p. 8, footnote 9, 2nd to last sentence) To be accurate, the sentence should read: "**Some** Senate OVP staff used…" The OVP correspondence office, located in the Senate, used a different system, however the OVP legislative affairs office, also located in the Senate, used the same system as the rest of the OVP.

Now on p. 14.
See comment 24.

(p. 11, 1st full ¶, 2nd sentence) To be accurate, the sentence should read: "Such a monitoring program should include evaluations of the ~~creation~~ **identification** of presidential **and vice presidential records**, maintenance and use…"

Now on p. 16.
See comment 25.

(p. 12, last full ¶) This paragraph does not adequately reflect the rationale EOP gave for not releasing copies of those 30 letters. As a matter of policy, where possible the EOP did not cross-pollinate its communications with various investigative bodies as a means of maintaining the confidentiality of the legitimate interests and investigative priorities of

those respective investigative bodies. This policy was communicated to GAO at the time by then-EOP staff.

Now on p. 16.
See comment 26.

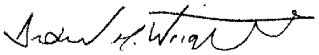
(p. 13, Conclusion) As discussed in the "General Commentary" section above, the Report makes no mention of the fact that there is no evidence whatsoever of any intent not to preserve presidential records or to inappropriately withhold responsive documents from investigative bodies. Considering the Report's criticism of EOP management practices, such an explicit statement is required in the interests of fairness.

* * *

Please do not hesitate to contact me with additional draft versions or if you would like to discuss the contents of these comments further. I can be reached at the transition office directly at 703.235.0409.

Thank you very much.

Sincerely,



Andrew M. Wright, Esq.
Counsel to the Former Vice President

The following are GAO's comments on the office of the former Vice President's letter, dated April 11, 2001.

GAO Comments

1. We revised the report to include the word "certain," but did not incorporate the remaining text as suggested by the Office of the former Vice President. The "certain" records that the report states are "deemed official government records" are those incoming e-mail messages not captured by the Automated Records Management System (ARMS) due to the malfunctions. These records consisted of both presidential/vice presidential and federal records.

2. We revised the report to reflect the technical clarification provided.

3. We submitted written questions to the Office of the Vice President (OVP), through the Executive Office of the President (EOP), on September 14, 2000, in which we asked if, and how, the OVP implemented the portion of the 1997 EOP policy which stated that staff "[m]aintain Presidential Records in organized files." In its November 14 response, the OVP stated that OVP staff implemented the requirements of the statute by maintaining presidential records "in organized files." In follow-up, we submitted another set of written questions to the OVP, through the EOP, on November 30. At this time, our request was to "[p]lease provide a list of all OVP staff who maintain the organized files of hard copy OVP records as mentioned in the EOP response. We would like to physically observe the files of randomly selected OVP staff and would like to arrange for this observation during the week of December 11, 2000." Our purpose in reviewing the files of selected staff was to respond to the House Committee on Government Reform's request that we determine whether OVP implemented adequate practices in accordance with applicable criteria for management of e-mail records. The intent of our request was to confirm the existence of e-mail records in such files and not to examine the text of the records contained therein, as explained verbally to the EOP Office of Administration General Counsel on numerous occasions during December 2000 and January 2001. We were not provided a contact within OVP with whom to discuss the request. The OVP did not respond to our request in writing until 6:49 p.m. on January 19, 2001, at which time OVP's response was that the OVP did not maintain a centralized filing system. In its response, OVP may have confused the word "organized" in our request with "centralized." Several hours after we were provided OVP's response, the administration had transitioned

and the records were in the process of transfer to the National Archives and Records Administration.

4. A key feature of an electronic recordkeeping system is that records be retrievable. To facilitate retrieval of records, the recordkeeping system must index records and contain fields that can be searched.

5. Best practices for management of records currently exist in the form of National Archives and Records Administration guidance contained in title 36 of the Code of Federal Regulations (CFR). Even though the majority of this guidance is prescriptive only for federal records, it does not explicitly preclude application of these practices in the management of presidential/vice presidential records. Although the evolution of ARMS continues, the stability of generally accepted records management best practices establishes a control foundation for any system, whether manual or automated.

6. We revised the report to identify "another EOP component" as EOP's Office of Administration.

7. We revised the report to reflect the technical clarification provided.

8. We revised the report to reflect the technical clarification provided.

9. The report was revised to reflect that external authorities other than those of law enforcement scrutinized the e-mail malfunctions.

10. We revised the report to incorporate the technical clarification provided.

11. Title 36 CFR, subpart 1234.24, Standards for managing electronic mail records, promulgates this standard (36 CFR 1234.24(c)).

12. The report provides a description of common federal standards for management and control of federal programs and systems. We did not imply that the application of such controls alters in any way the determination of whether a record is presidential/vice presidential or federal. The inclusion of this discussion was to emphasize that federal programs, such as records management programs, and systems, such as ARMS and the e-mail system, are subject to application of certain management controls. These controls ensure the effectiveness of programs as well as ensure that adequate integrity, confidentiality, and availability of electronic information resources are maintained. Both

the Presidential Records Act (PRA) and the Federal Records Act (FRA) require the implementation of management controls.

13. The new information provided in the Office of the former Vice President's comments on the draft has been incorporated into the report.

14. We revised the report to reflect the technical clarification provided.

15. Under the PRA, the Vice President (and thus OVP), was responsible for management of the Vice President's records. From the beginning of the administration, it retained the primary duty to implement records management controls, and thus, to either modify its records management practice to accommodate the system transition or to ensure that this responsibility was assigned to another entity.

16. We attribute this statement to EOP because it was taken from the White House memo to us on January 19, 2001, which stated that it provided EOP's responses to our questions submitted on November 30, 2000.

17. The new information provided by the Office of the former Vice President has been incorporated into the report.

18. The new information provided by the Office of the former Vice President has been incorporated into the report.

19. See our response to comment 3 above.

20. In its January 19, 2001, response to our written questions, the EOP stated that at some point between issuance of the May 1993 EOP policy and 1998, OVP ceased requiring the retention of paper copies of e-mail records. We were provided no evidence, or allowed to physically confirm, that some printed e-mail records were retained. Also, the EOP policy did not explicitly require that records be captured by ARMS, as indicated by the comment.

21. We revised the report to reflect the technical clarification provided.

22. As discussed in our response to comment 15 above, the OVP had a duty to ensure continual preservation of its vice presidential records, including ensuring that this responsibility effectively transferred to the Office of Administration.

23. We revised the report to reflect the technical clarification provided.

24. The characteristics described in the report are based on National Archives and Records Administration standards as presented in title 36 CFR. Creation of records is the manual or automated process during which a document is produced and is determined to qualify as a record. Identification is a part of this process in which there is recognition that a document is a record and a determination is made as to the type of record. The characteristics described pertain to the monitoring of both presidential/vice presidential and federal records.

25. We agree with the Office of the former Vice President's assessment; however, the only rationale that was provided to us, either orally or in writing, was that the letters were "deserving of respect and deference." We revised the report to incorporate the additional rationale provided in its comments to the draft report.

26. The Committee requested that we assess the adequacy of management controls over EOP's records management system, particularly as they relate to the numerous e-mail system malfunctions experienced by EOP since 1996. That assessment entailed the examination of management policies, programs, and practices as they related to effective records management controls and to the requirements of the PRA and FRA. Our review was not directed at assessing the intent of individuals responsible for preserving records and providing responsive records to investigative bodies. As such, we can offer no conclusions on this matter.

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