Office of Inspector General

Audit Report

Assessing the Year 2000 Computer Problem

Department of Transportation

Report Number FE-1998-053
Date Issued: December 18, 1997

Memorandum

U.S. Department of Transportation

Office of the Secretary of Transportation

Office of Inspector General

Subject: ACTION: Report on Assessing the
Year 2000 Computer Problem, DOT
Report Number: FE-1998-053

Date: December 18, 1997

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Reply to
Attn of:

To: Michael P. Huerta
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BACKGROUND AND OBJECTIVE

This report is the first in a series of reports on the Department of Transportation (DOT) efforts to address the Year 2000 (Y2K) Computer Problem. Our objective was to evaluate Departmentwide strategy, and Operating Administration (OA) plans, for ensuring automated information systems and applications are Y2K compliant by the end of calendar year 1999.

Until recently, most computer systems and applications were designed to use two digits to designate the year. As the year 2000 approaches, these systems and applications may not be able to operate properly because they cannot differentiate between the year 2000 and 1900, since both would have the same two digit representation "00." Consequently, some systems may abort or provide erroneous data.

The Office of Management and Budget (OMB) and the Department's Acting Chief Information Officer (CIO) established milestones for completing the Y2K project. For reporting purposes, OMB recognizes five Y2K phases: (i) awareness, (ii) assessment, (iii) renovation, (iv) validation, and (v) implementation. Awareness of Y2K issues is an ongoing process in the Department. This report addresses the assessment phase.

In the assessment phase, agencies are required to determine the vulnerability of computer systems and applications to Y2K problems, and develop plans for correcting deficiencies. Requirements of the assessment phase include completing a systems inventory, evaluating the hardware and software environment, identifying interfaces among systems, estimating cost, and developing renovation and contingency plans. The OMB milestone for completion of assessments was June 1997. The Department's milestone for completing assessments was August 1997 for all OAs, and December 1997 for the air traffic control systems in the Federal Aviation Administration (FAA). OMB did not issue waivers to extend the assessment milestone. OMB also initiated quarterly reporting requirements. The Department had submitted three quarterly progress reports to OMB; May 15, August 15, and November 14, 1997.

Audit work on the Department's Y2K assessments was performed between May and November, 1997. Our scope initially did not include FAA because the General Accounting Office (GAO) was reviewing FAA as part of its Governmentwide Y2K oversight. GAO completed its work and had an exit conference with FAA on October 2, 1997. On October 17, 1997, we expanded the audit scope to include FAA. In performing the audit, we used guidelines developed by the CIO Council Subcommittee on Year 2000. The audit was conducted in accordance with <u>Government Auditing Standards</u> prescribed by the Comptroller General of the United States.

RESULTS-IN-BRIEF

We validated information in the Department's May submission to OMB, and the data provided by the OAs to the Department's CIO office for the August and November reports. We identified six areas which were brought to management's attention before the August and November reports were finalized. Overall, we found the Department had not accurately reported its Y2K status to OMB on May 15, and may have continued to do so if the data reported by the OAs to the Department had not been audited independently. As issues identified by the audit were brought to management's attention, the Secretary, Deputy Secretary, and the Department's Acting CIO initiated corrective actions promptly, and proposed reports to OMB were adjusted.

Departmental Strategy

Formal guidance establishing the Department's strategic plan for dealing with Y2K matters was issued by the Department's Acting CIO, but not until September 19, 1997. At the Department level, the Y2K coordinator's office was a one-person operation, without support staff proficient in technical and operational issues concerning Y2K. Departmental guidance was limited and untimely. For

example, the Department had not defined what constituted mission-critical systems or what to include in total inventory (systems, equipment, and electronics). This was addressed in the guidance on September 19, 1997. The Department's Y2K office served primarily as the collection point for reporting progress to OMB and Congress, but was not verifying data reported by the OAs as of November 14, 1997.

Systems Inventories

Identifying all systems is the first, and key, step for assessing the scope of Y2K work and estimating resource needs. At the start of our audit work, the Department's Y2K inventory included 717 systems. To determine the accuracy of this data, we compared the OA systems in their Y2K inventories (717) with other systems inventories, such as the Information Resource Management 5-Year Plan. We identified 306 systems that were not included in the Y2K inventory. Of these, 232 were in FAA and the remaining 74 were in the other OAs.

As of October 31, 1997, the OAs included 55 of the 306 OIG-identified systems in their inventory. Fourteen of the fifty-five systems were determined by the OAs to be mission-critical. The remaining 251 OIG-identified systems were being reviewed for possible inclusion in the Y2K inventory.

We also found the OAs were not fully assessing electronic equipment for Y2K implications. We identified at least 10,000 electronic equipment items that were not fully evaluated for Y2K problems with embedded micro-chips. Embedded micro-chips, which are used in electronic devices, such as communication or navigation systems, could be programmed with time and date mechanisms which could potentially create Y2K failures. The OAs were researching these items for Y2K implications.

Completed Assessments

The Department's reported percentage of complete assessments was overstated in its May 15 report to OMB, and in its proposed reports for August and November. The August and November reports to OMB included adjustments based on our results. For example, the Bureau of Transportation Statistics (BTS) reported its Office of Airline Information as being 100 percent assessed. We found little documentation or evidence supporting completion of assessment efforts. BTS had not prepared adequate renovation or contingency plans, and had no documentation supporting cost estimates. As a result, the Department reported the BTS percentage of completion as zero in the November 14 report to OMB.

In its August report, the Coast Guard reported assessment work was 100 percent complete, although it had not yet determined whether 27 of its mission-critical systems had Y2K problems. We reviewed seven mission-critical systems reported by Coast Guard as fully assessed as of October 28, 1997, and found none was fully assessed in accordance with Departmental criteria. At least one of the seven mission-critical systems will not be fully assessed until July 1998. In computing the assessment completion percentage for the November 14 report to OMB, the Department included 100 percent of the Coast Guard systems as fully assessed. However, the Department noted those systems were being revisited, and the updated status would be included in the quarterly report to OMB in February, 1998.

As of October 28, 1997, FAA was reporting 47 percent of its mission-critical systems were fully assessed. We found FAA included systems in the Y2K assessment percentage that it deemed already compliant or having no Y2K implications, which is contrary to OMB guidelines. For assessment purposes, OMB requires reporting only on mission-critical systems that need repair. Based on our inquiries, GAO guidance, and an FAA reassessment, 150 systems were reclassified as mission-critical and were included in the November 14 report to OMB for the first time.

On November 14, 1997, the Department reported to OMB that FAA was 38 percent complete on its assessments. This was based on 12 of 32 systems being repaired. However, as noted in the November 14 report, FAA had 329 mission-critical systems which needed to be assessed. Accordingly, the 38 percent was significantly overstated when considering FAA's entire universe of mission-critical systems.

Compliant Systems

On May 15, 1997, the Department reported 18 systems were Y2K compliant. We reviewed eight of these systems, and as of August 13, 1997, found no evidence that these systems were properly assessed, tested, and certified as being Y2K compliant. Based on our findings, the Department reported, in its August 15 report to OMB, that none of its systems was Y2K compliant because they did not meet the departmental criteria for compliance. Subsequently, at least one mission-critical system, included in our sample and reported as Y2K compliant, was found to be noncompliant. The OAs were researching the other 17 systems for Y2K implications.

As of October 31, 1997, the OAs reported to the Department that 98 of 368 systems were Y2K compliant for reporting to OMB on November 15. We again tested for evidence of compliance on 79 systems and found 43 systems, deemed

Y2K compliant by the OAs, did not have proper evidence of being evaluated and certified as being compliant. Based on our results and certifications provided by the OAs, the Department reported 36 systems to OMB as compliant in its November 14 report. We agree the 36 systems were Y2K compliant.

Estimated Cost for Y2K Fixes

The $92 million estimate in the May 15 report to OMB for fixing Y2K problems was unsupported. We found cost estimates did not include all mission-critical systems, and many estimates for non-mission-critical systems were based on unsupported estimates. Based on our work and ongoing Departmental initiatives, the estimated cost to fix Y2K problems had increased to $265 million in the August 15 report and $266 million in the November 14 report.

As of November 14, 1997, the OAs were still developing their systems inventories, and FAA was still assessing the Y2K implications for 265 of its mission-critical systems. For example, the current Y2K cost estimate to fix the "host" computers for the air traffic control system was $783,000 (this Y2K project is separate from the ongoing "host" replacement project to be completed by the year 2005). However, the En Route Integrated Products Team Leader told us the total Y2K cost may be an additional $40 million if the computers have to be replaced because of Y2K problems. Based on the magnitude of ongoing work, the estimated cost to fix Y2K problems is not reliable.

Computer and Service Contracts

On January 2, 1997, the Federal Acquisition Regulation (FAR) interim rule on Y2K compliance was established to ensure Federal agencies procure products that were Y2K compliant. We judgmentally sampled contract documents from all OAs, and identified five OAs that were not consistently providing the appropriate Y2K language in their contracts despite the Y2K requirements. For example, the Coast Guard was purchasing helicopter roto-tuner test equipment without specifying this equipment must be Y2K compliant. Seventy-five roto-tuners previously purchased by Coast Guard were noncompliant, and require upgrades. Coast Guard had not yet determined the cost of upgrading the roto-tuners.

Actions Taken by the Department

To ensure accurate reporting to OMB on August 15 and November 14, we worked closely with the Department's CIO office. We also provided our interim results to the Department's CIO office on July 21 and August 13, 1997. We provided formal comments to the Deputy Secretary on August 1, 1997, and to the Department's Acting CIO on August 13, 1997. On November 12, we provided

our current results to the Department's CIO office and senior Y2K officials in each of the OAs.

The Department recognized the need to better manage its Y2K program. As a result, these key actions have been taken:

- On October 1, the Secretary issued a memorandum to Heads of the OAs requiring (i) appointment of a senior executive for Y2K, (ii) project management plans detailing schedules, priorities, costs, financing plans, and contingencies, (iii) the Department's CIO to immediately report on unfinished system assessments, and (iv) acceleration of the validation phase from December 31, 1999, to July 31, 1999.

- The Deputy Secretary developed a monthly tracking system which measures OA progress of assessments, renovation, validation, and implementation. The Deputy Secretary has made Y2K a high priority, and is requiring senior-level management accountability.

- The CIO office issued departmental criteria on mission-critical systems. On September 19, 1997, the Department's Acting CIO issued specific guidance on what constituted completion of each Y2K phase. For the assessment phase, the Acting CIO required a total inventory, an evaluation of Y2K for each inventory item, identification of all systems interfaces and data exchanges, estimated cost for fixing Y2K problems, a renovation plan, and a contingency plan for all systems. The Acting CIO also required OAs to ensure that all information technology procurement documents have the required FAR language requiring Y2K compliance.

- The proposed reports submitted by the OAs to the Department's CIO office were adjusted, based on the audit results, before finalizing the August 15 and November 14 reports to OMB.

Conclusion

The Department is behind schedule in completing its Y2K assessments. Since our memorandum to the Deputy Secretary on August 1, 1997, the Department has initiated a series of actions, with direction coming from the Secretary, Deputy Secretary, and Acting CIO. As a result of this high-level involvement, progress is being made, but much more needs to be done. As of November 14, 1997, total systems inventories were not developed and assessments for mission-critical inventory were not complete. Timely completion of assessment work by the OAs, and increased oversight by the Department's CIO office, are essential to ensure the Department is ready to begin solving its Y2K problems.

RECOMMENDATION

We recommend the Department's Acting CIO, in addition to continuing the ongoing initiatives, obtain additional support staff to ensure the Department's Y2K program has the necessary resources to properly oversee the work remaining on this important project.

Management Comments

The Department's Acting CIO reviewed this report on December 9, 1997. He concurred with the recommendation and stated that implementation actions will be taken by March, 1998. No further response to this report is required.

We appreciate the cooperation and assistance provided during the audit. Please contact me on (202) 366-1992, or John Meche on (202) 366-1496, if you have questions concerning this report.