State of New York
Office of the State Comptroller
Division of Management Audit and State Financial Services

NEW YORK STATE OFFICE FOR TECHNOLOGY AND SELECTED STATE AGENCIES

NEW YORK'S PREPARATION FOR THE YEAR 2000: A SECOND LOOK

REPORT 98-S-21

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Comptroller

State of New York
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Division of Management Audit and State Financial Services

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Gentlemen:

The following is our report addressing New York State's preparation for the Year 2000.

This audit was done according to the State Comptroller's authority as set forth in Article V, Section 1 of the State Constitution and Article II, Section 8 of the State Finance Law. Major contributors to this report are listed in Appendix A.

Office of the State Comptroller
Division of Management Audit
and State Financial Services

April 5, 1999

Executive Summary

New York State Office for Technology and Selected State Agencies
New York's Preparation for the Year 2000: A Second Look

Scope of Audit

The essence of the Year 2000 (Y2K) problem is that many computer systems record dates in a format that does not include the century. Without correction, such systems are likely to produce errors or fail in the near future. In April 1996, the Office for Technology (OFT), formerly the Governor's Task Force on Information Resource Management, began coordinating and monitoring the Y2K compliance projects of State agencies and public authorities (agencies). In July 1997, Governor Pataki identified Y2K compliance as the State's number one technology priority. On October 14, 1997 we issued our first audit report (Report 96-S-84) concerning the State's Y2K problem. That prior audit concluded that there was a real risk that agencies' services would be disrupted unless more effort and resources were devoted to addressing the Y2K problem.

Since the prior audit, OFT reports that progress has been made towards ensuring the State's computer systems are Y2K compliant. The following Y2K high priority concerns remain to be addressed going forward. These include the need to control the testing of corrected systems, to receive and process Y2K compliant data from outside data exchange partners, to remediate computer code that is embedded in various equipment items, and to provide for service continuity or contingency plans in the event of Y2K system failures. Also, ensuring that electricity, water and telecommunications remain available is a major concern because these services depend upon utility companies having Y2K compliant systems. In addition, the liability from Y2K failures is a concern for all government agencies. Finally, a more comprehensive method must be available to assess the State's readiness for the year 2000.

Our audit examined the actions taken through October 30, 1998 by OFT and selected State agencies to address emerging high priority Y2K concerns. Our audit objective was to answer the following question:

- Does it appear that the State's Y2K compliance efforts, as coordinated by the OFT, will be effective in ensuring that public services and State operations are not materially interrupted at the turn of the century?

Audit Observations and Conclusions

We believe that although considerable Y2K compliance efforts have been made by OFT and agencies since our prior audit, unless additional efforts and resources are committed to address high priority concerns, a significant risk continues that important public services provided by the State will be interrupted at or before the turn of the century. We further believe OFT should expand its monitoring efforts for the critical phases of testing, data exchanges, contingency plans and other Y2K areas to ensure State services continue without interruption.

As of September 30, 1998, OFT reports that 9 of 45 critical State computer systems and 126 of 327 high priority systems are Y2K compliant. However, OFT stipulates that a system may be compliant even though it may not yet be able to correctly receive or process data from data exchange partners. We recommend that OFT determine the Y2K status of systems' data exchange capability. Also, according to information gathered by OFT from agencies, the State's 45 critical systems were 85 percent complete as of September 30, 1998. However, this statistic compares time expended to time planned and does not indicate the status of critical tasks to make systems Y2K compliant. We recommend that OFT verify agency status information on a sample basis and require agencies to identify any critical Y2K tasks that have been omitted or are not likely to be performed. (See pp. 5-6)

OFT has been working with the Public Service Commission and the State Emergency Management Office to ensure that utility companies adequately resolve Y2K problems and formulate appropriate contingency plans. OFT must continue to oversee this high priority concern and along with the Governor and respective agency leaders be prepared to formulate necessary strategies to protect the public in the event of any lack of public utility readiness. Also, we recommend that OFT advise all agencies to assess potential liabilities associated with the Y2K failure of high priority and critical systems. (See pp. 6-7)

We sent a questionnaire to 118 agencies requesting information on their actions regarding system testing, data exchanges, embedded systems and contingency planning. We also visited the Departments of Taxation and Finance, Motor Vehicles, and Correctional Services as well as the Division of Parole and the State Education Department to assess their Y2K actions in these areas. We conclude that as of October 1998, most agencies were in the early stages of addressing Y2K compliance for data exchanges and embedded systems. In addition, none of the questionnaire respondents could provide us with Y2K contingency plans. Procedures for testing compliant computer systems at the agencies we visited, ranged from good at Taxation and Finance to inadequate at Correctional Services. (See pp. 9-16)

Comments of OFT and Agency Officials

OFT officials responded that significant progress has been made since the time of our audit, but they do not specifically address most of our recommendations. Generally, agency officials agree with our recommendations. Correctional Services officials, however, disagree with our conclusions about weaknesses in their controls for testing compliant systems.

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Introduction

Background

The essence of the Year 2000 (Y2K) problem is that many computer systems record dates in a format that does not include the century. Therefore, such systems cannot distinguish the year 2000 from the year 1900. Unless such systems are corrected to recognize the year 2000, some are likely to produce errors or fail in the very near future.

The scope of the Y2K problem within New York State is imposing because of the sheer volume of computerized business processes, the presence of hardware platforms ranging from mainframes to personal computers, and the use of thousands of computer programs which comprise millions of lines of computer code. The Y2K problem may affect agency calculations and effective dates for benefits, such as welfare and unemployment. It may also affect many time-related mechanisms, such as expiration dates for licenses, maintenance of criminal histories and repair schedules for public transportation. Fixing the Year 2000 problem for applications that support the State's core business processes requires expensive corrections to program code, or costly replacement of systems.

New York State began a coordinated approach to addressing the Year 2000 problem in April 1996 when the Governor's Task Force on Information Resource Management, now the New York State Office for Technology (OFT), was assigned the task of coordinating State agency efforts to achieve Y2K compliance. While agencies are responsible for resolving their Y2K problems, the OFT coordinates with agencies and public authorities to reduce duplicative efforts, to identify common problems and generalized solutions and to monitor progress in completing Y2K compliance projects. The OFT views its role as that of a facilitator of statewide compliance efforts. Therefore, OFT maintains a collaborative, rather than a control, relationship with agencies. The OFT also provides Year 2000 support to quasi-state agencies and to local governments. However, OFT does not monitor the Y2K compliance progress of a number of governmental organizations in the State, such as the State University of New York and the Unified Court System. In July 1997, Governor Pataki identified Year 2000 compliance as the State's number one technology priority.

The Gartner Group, an internationally recognized technology consulting firm, has developed a framework for the management of Y2K projects. The OFT suggested that agencies use this framework in managing their respective Y2K projects. The Gartner Y2K project framework assigns a

relative percentage of project effort to each of the following seven phases: awareness; inventory; planning; analysis and design; modification; testing; and implementation.

On October 14, 1997 we issued our first audit report (Report 96-S-84) on the State's Y2K problem. Our prior audit examined the extent to which agencies had become aware of the Y2K problem and had established project teams and project plans to correct the problem. Our prior audit also evaluated the effectiveness of the OFT's oversight and monitoring of statewide Y2K compliance efforts. Our prior audit determined that most State agencies were in the early phases of their Year 2000 projects and concluded that there was a real risk that agency services would be disrupted unless much more effort and resources were devoted to addressing the Y2K problem.

Since the time of our prior audit, several additional Y2K high priority concerns, including the following ones, have emerged.

Testing Compliant Systems Once systems have been replaced or corrected to achieve Y2K compliance, they must be tested individually and in conjunction with any systems they interact with. Otherwise, management cannot be adequately assured that the systems can process correctly during actual production when they encounter Year 2000 dates from a variety of input sources. While testing is one of the last Y2K project steps, it is often the most costly and time-consuming. Some estimates indicate that testing can account for 45 percent or higher of Y2K time and effort. As the Year 2000 draws near, the risk increases that insufficient time and resources remain available to allocate to this most important activity.

Data Exchanges Management must ensure that the data its computer systems receive from external systems is Y2K compliant, and that its own systems can correctly read and process such data.

Embedded Systems Equipment which provides vital support services, such as building heating and ventilation systems or security systems, is typically controlled by vendor-supplied computer microprocessors (chips) as well as computer code contained on the chips. Unless management has ensured that the chips and the code are Y2K compliant, basic functions affecting public health and safety could be at risk.

Contingency Planning As the Year 2000 approaches, it is prudent to anticipate that systems may fail and that service disruptions may result. Therefore, management must develop contingency plans to provide for continuity for vital business and service functions.

Public Utility Infrastructure Providing continuous public utility services such as electricity, telecommunications and water, depends on the availability of Y2K compliant computer systems. Effective leadership and policy direction must be taken to ensure these vital services continue without major disruption as the Year 2000 approaches.

Legal Liability Management must anticipate and assess the risk for legal liability and potential costs that may result if services to the public are disrupted because of negligence in addressing Y2K problems.

The Meaning of "Y2K Compliant" A comprehensive method of assessing readiness for the Year 2000 must be established to enable management and the public to understand what is meant when a system is reported as Y2K compliant. Those responsible for reporting when a system is Y2K compliant, should do so in a manner that is consistent with the assessment.

Audit Scope, Objective and Methodology

Our audit examined the actions taken as of October 30, 1998 by the OFT and selected State agencies to address high priority concerns pertaining to the Y2K problem. The objective of our performance audit was to determine whether the State's Y2K compliance efforts, as coordinated by the OFT, will be effective in ensuring that public services and State operations are not going to be materially interrupted at or before the turn of the century. To accomplish our objective, we conducted research in emerging priority Y2K concerns, interviewed OFT and State agency officials and sent survey questionnaires to 118 State agencies and other entities. To verify the steps State agencies have taken to address the Y2K problem, we visited the following five State agencies: the Department of Taxation and Finance (Tax), the Department of Motor Vehicles (DMV), the Department of Correctional Services (Corrections), the State Education Department (SED) and the Division of Parole (Parole). We selected these organizations after considering the significance of their systems (i.e., on the OFT's lists of critical systems), the results of our prior audit and the work of other auditors.

We conducted our audit in accordance with generally accepted government auditing standards. Such standards require that we plan and perform our audit to adequately assess those operations of the agencies which we include in our audit scope. Further, these standards require that we understand the agencies' systems of internal control and their compliance with those laws, rules and regulations that are relevant to the operations which we include in our audit scope. An audit includes examining, on a test basis, evidence supporting transactions recorded in the accounting and operating records and applying such other auditing procedures as we consider necessary in the circumstances. An audit also includes assessing

the estimates, judgments and decisions made by management. We believe that our audit provides a reasonable basis for our findings, conclusions and recommendations.

We use a risk-based approach when selecting activities to be audited. This approach focuses our audit efforts on those operations that we have identified through a preliminary survey as having the greatest probability for needing improvement. Consequently, by design, finite audit resources are used to identify where and how improvements can be made. Thus, we devote little effort to reviewing operations that may be relatively efficient or effective. As a result, our audit reports are prepared on an "exception basis." This report, therefore, highlights those areas needing improvement and does not address activities that may be functioning properly.

Response of OFT and Agency Officials

A draft copy of this report was provided to OFT officials, as well as officials of the five State agencies we audited, for their review and comment. Their comments have been considered in the preparation of this report and are included as appendices.

Within 90 days after the final release of this report, as required by Section 170 of the Executive Law, the Chairperson of the New York State Office for Technology and the heads of the Department of Taxation and Finance, the Department of Motor Vehicles, the Department of Correctional Services, the State Education Department and the Division of Parole shall report to the Governor, the State Comptroller, and the leaders of the Legislature and fiscal committees, advising what steps were taken to implement the recommendations contained herein, and where recommendations were not implemented, the reasons therefor.

Areas Requiring OFT Action

In our prior audit report on the State's Y2K efforts, we noted many of OFT's accomplishments to help promote statewide Y2K compliance. In Exhibit A of this report we summarize the more significant OFT accomplishments for the period April 1996 through September 1998. Much has been done, however, additional OFT effort will be needed to effectively address emerging priority concerns.

The Meaning of "Y2K Compliant"

Using status information provided by agencies, OFT reported that, as of September 30, 1998, 9 of the State's 45 most critical systems are Y2K compliant. In total, OFT reports that the effort on the most critical systems is 85 percent complete. In addition, OFT reports that 126 of the State's 327 other high priority systems are Y2K compliant, and that work on the remaining high priority systems is 60 percent complete.

We believe care must be taken when using these statistics to gauge the State's Y2K progress for critical and high priority systems. For example, the reported percentage of effort completed compares the time expended on Y2K initiatives to the original estimates of total effort required for Y2K. As such, this statistic does not indicate the status of all critical tasks required to achieve Y2K compliance. OFT should require agencies to report revised estimates to complete their work and to identify whether any critical Y2K steps either have been omitted or are not likely to be performed. In addition, OFT does not routinely verify status information which the agencies provide. Therefore, there is increased risk that the statistics on the percentage of Y2K effort may not be as informative and meaningful in measuring progress. The OFT should verify agency-reported Y2K progress on a sample basis to better ensure the accuracy of the State's Y2K status information.

The OFT Internet Home Page provides OFT's definition of Y2K compliance as follows: "Compliant is defined as all remediation and tests under the agency's control have been completed and the system has been returned to production. This may not include compliance with all external data exchange partners. Agencies are actively working with their data exchange partners." State agencies and public authorities do not work in isolation; they must regularly communicate and work cooperatively with other State, Federal and local partners, as well as private sector organizations and the public. We believe that the OFT should require agencies and public authorities to disclose in their status reports the extent of Y2K completion on data exchanges for high priority and critical systems so that

a more comprehensive assessment of the State's readiness for the Year 2000 can be made.

We also note that the OFT definition does not mention whether compliance includes the establishment of contingency plans for continuing vital services or business functions in the event that Y2K corrected high priority and critical systems fail. We believe that OFT should address this topic and that agencies should report Y2K contingency plan completion accordingly. In the context of knowing the Y2K readiness of the State's high priority and critical applications, it is important to know whether fail-safe measures have been addressed.

New York State's Public Utility Infrastructure

Public utilities provide State agencies and New York's citizens with vital services including telecommunications, power and water. The delivery of these services is greatly dependent upon the proper functioning of computer-based systems operated by utility companies. Therefore, it is essential that such public utility systems become Y2K compliant in a timely manner.

In July 1998, the OFT began working with the Public Service Commission (PSC) and the State Emergency Management Office (SEMO) to ensure that utilities adequately resolve Y2K problems and formulate appropriate contingency plans. The PSC has met with utility companies that provide electric, gas, telephone, cable television and water services to assess their Y2K readiness plans and to monitor their progress in carrying out these plans. On October 21, 1998, the PSC announced that public utilities will be required to complete their Y2K readiness programs by July 1, 1999. The PSC reports on utilities' readiness status in terms of remediation efforts, system testing, contingency planning and overall schedule management. OFT officials have reviewed the PSC's monitoring of utilities' Y2K preparedness and state that they are satisfied the PSC is taking adequate steps to address this issue. The OFT has met also with SEMO officials to ensure local emergency managers have received a copy of OFT's Y2K guide, and that county officials include Y2K issues in formulating county hazard assessments and disaster preparedness plans. The OFT plans to meet regularly with SEMO to discuss additional plans.

We determined that New York is like other states in the way it monitors the extent of utilities' Y2K-readiness: it relies on the assessment and oversight activities of the utilities' regulatory agency. We recognize the logic of depending upon the oversight activities of the PSC, but believe that PSC should verify the data reported by the utilities. In addition, we believe that OFT should continue to fully monitor the PSC coordination of the Y2K readiness of the State's essential public utilities. Any indications of a lack of readiness on the part of public utilities must be

addressed promptly by OFT to ensure the formulation of necessary strategies to protect the public including plans for implementing emergency management steps.

Assessing Liability

The Y2K problem presents the State with a legal, as well as a technical challenge. There is a possibility that those injured due to Y2K-related failures may seek relief through litigation. Professional accounting and auditing organizations such as the American Institute of Certified Public Accountants and the Institute of Internal Auditors state that a risk assessment of the organization's legal liability should be made. Agencies should therefore be aware of the risks that could arise from system failures and the liability associated with those risks.

The legal ramifications of the Year 2000 are an open issue in New York State. Recently, legislation to limit the State's Y2K liability through the principle of sovereign immunity was introduced in the State Legislature. However, the Legislature has not passed this law and issues surrounding this limitation of liability remain unresolved. In addition, neither the OFT nor the individual agencies we visited have assessed the State's potential liabilities related to the Y2K problem. Of the agencies we visited, only Parole, had begun to assess its potential exposure due to Y2K issues.

The OFT has taken some steps to anticipate potential Y2K liability issues. For example, the OFT worked with the New York State Attorney General's Office to draft Year 2000 immunity legislation. The OFT and the Attorney General's Office also collaborated to provide agencies with guidance about developing contract warranty language and about creating strong documentation as evidence of their efforts at Y2K compliance. However, OFT has not provided guidance to agencies regarding assessing potential liabilities.

Agencies need to know the dimensions of their potential legal liability so they can act now to mitigate that liability to the fullest extent possible. Since the OFT should be aware of the State's exposure from Y2K-related problems, it should also monitor agency progress on this issue and have information on the scope of this risk statewide.

Recommendations

Office for Technology

1. Require agencies to identify in their status reporting whether any critical Y2K steps have been omitted or are not likely to be performed, and report any revised estimates to complete their Y2K work.

2. On a sample basis, verify the accuracy of agency reported Y2K completion information for high priority and critical systems.

3. Require agencies to report whether and to what extent data exchanges have been made Y2K ready for high priority and critical systems that are otherwise defined as completed.

4. Require agencies to report whether and to what extent contingency plans have been prepared for high priority and critical systems.

5. Continue to monitor PSC efforts to oversee the Y2K compliance activities and status of public utilities. Be prepared to work in conjunction with the Governor, PSC and SEMO to promptly formulate necessary strategies to protect the public should there be indications of the lack of Y2K readiness on the part of public utilities.

6. Provide guidance to agencies on assessments of potential legal liabilities that may arise from the result of Y2K failure of high priority and critical systems, and monitor agencies activities in these regards.

(OFT officials did not specifically respond to recommendations number 1 through number 6. Officials maintain that OFT's role is to facilitate and to coordinate the State's Year 2000 compliance efforts. They view our recommendations as inappropriately expanding OFT's role to include audit functions.)

Auditors' Comments: We believe that our recommendations pertain to management and not to audit responsibilities for achieving Y2K compliance. We do, however, recognize that our recommendations require that OFT take a more control oriented approach to certain high priority aspects of the State's Y2K efforts.

Agencies' Progress in Achieving Year 2000 Compliance

As a result of our site visits and our review of survey responses we received from 80 agencies, we made the following general conclusions: some State agencies do not adequately control the critical process of testing remediated systems; most agencies are in the early stages of addressing potential problems related to data exchanges and embedded systems; and none of the agencies has completed substantive work on contingency planning. State agencies, with appropriate guidance from the OFT, must increase their focus on resolving these issues.

Testing Remediated Systems

The Year 2000 problem is pervasive, potentially affecting an organization's system and applications software, hardware, databases and external interfaces. As described by the Gartner Group, testing of remediated systems is often the largest single component of an organization's Y2K project. Testing is an essential process to determine if systems will produce the correct results, work properly with other systems and not jeopardize an organization's ability to perform critical tasks. It is imperative that testing be conducted with appropriate internal controls. For example, the testing process should include the following control elements: a test plan and schedule; procedures for designing and documenting tests; and evidence that tests have been executed properly and that results have been evaluated. An effective system of internal control promotes the integrity of the testing process and enhances management's assurance that remediated systems work reliably.

In reviewing questionnaire responses, we found that 28 of 80 (35 percent) respondents answered our survey questions related to the status, or progress made, in testing their high priority systems. Because we received so few responses on this topic, we cannot report on the status of testing remediated systems statewide. We recommend that OFT follow up with agencies to provide further guidance and to obtain explanations about the progress and problems associated with the testing phase of their Y2K projects.

Response of OFT Officials to Audit: OFT officials responded that they provided training for testing methodologies for mainframe applications, personal computers and embedded systems.

We evaluated testing at the five agencies we visited and we concluded that controls over this process should be improved to ensure that adequate testing is performed timely. At these agencies, we found a wide range in

the adequacy of controls over testing, from effective controls at Tax to a general lack of controls over testing at Corrections. Tax has established a system of controls for its Y2K testing that should result in testing that is properly planned, conducted and reported on. It has made significant progress in testing its remediated systems and should meet its objective of completing tests for its priority systems by the end of calendar year 1998 if efforts continue to be managed effectively.

Parole has established an adequate infrastructure for remediating its computer systems for Y2K compliance. If current progress and monitoring is maintained, the Division should complete testing of its priority systems by early 1999. However, we did find that Parole should improve its controls over the testing of remediated systems. For example, there was no documentation to show the design and scheduling of tests for the two programs we selected, nor were there any records detailing the results of testing for the on-line systems we reviewed.

Since our prior audit, DMV has made significant progress in addressing Y2K compliance, having created a Year 2000 Office, developed project plans and contracted with a consultant to assist in its efforts. While DMV has established controls over the testing process, we found that documentation of some testing efforts did not always demonstrate that required procedures had been followed. For example, we could not identify any substantive evidence of testing work performed by the Department's Quality Assurance Team on either of the applications we reviewed.

SED has developed a plan to guide its testing of remediated systems and has established a testing team to lead this effort. However, SED had not begun wide-scale testing as of September 1998 because its remediation efforts were still incomplete at that time. We are concerned that SED has not allowed itself enough time to complete systems remediation and testing, as well as to resolve any additional challenges which may arise after testing. Therefore, we recommend that SED establish deadlines for the completion of testing on high priority and critical systems and construct a schedule, including necessary resources, to complete testing by the deadlines.

Corrections had not established the internal controls necessary to adequately evaluate the testing of remediated systems. In addition, we determined that Corrections has not developed a formal plan for completing the Y2K project. Therefore, we were unable to compare project milestones to actual progress and assess the reasonableness of Department estimates that it will complete its Y2K project in a timely manner. We believe that the weaknesses in Corrections testing controls and the overall lack of formal planning and documentation for its Y2K

project warrants that the OFT follow up with Corrections to more fully assess the status of this Y2K project and to determine whether any additional actions are needed to ensure the timely, successful completion of the project.

The OFT does not require agencies to report specifically on the status of their overall testing efforts, or on the progress of testing for each of their major systems. OFT officials told us they consider each agency to be in the testing phase when the agency reports having expended over 50 percent of its planned Y2K project efforts. However, the fact that an agency has used 50 percent or more of the time it budgeted for its Y2K project does not necessarily mean it has completed 50 percent of the activities needed to achieve compliance or that testing has been engaged. For example, the OFT status data, as of October 1998, indicates that SED's State Aid and Professional Licensing Systems are, respectively, 64 and 75 percent complete. Both systems are regarded as among those critical systems which must be made Y2K compliant. However, as of September 6, 1998, SED was still completing its remediation on these high priority systems and testing had not yet been started.

We believe it is essential that the OFT require agencies to report on their progress in testing systems, especially critical systems. The OFT should also validate the actual status of testing, based on risk factors that consider the critical nature of the system involved and/or the effectiveness of controls over testing at the agency in question. OFT officials told us they plan to hire a consultant to perform independent validation and verification (IVV) of code remediation and testing efforts for the State's most critical systems. The Risk Assessment Team, which the OFT established in March 1998 (See Exhibit A) should also expand the scope of its reviews of Y2K projects for the State's most critical systems if an agency's controls over the testing process are inadequate. We believe validation efforts and vigorous risk assessment reviews are necessary to obtain adequate assurance that critical systems have been adequately tested in time to avoid system failure.

Response of OFT Officials to Audit: OFT established standards for reporting compliance progress for all project steps, including testing. In addition, OFT officials advised us that the procurement process for the IVV began on March 29, 1999.

Data Exchanges

State agencies regularly exchange information internally, between systems, and with other organizations. If incoming data is not in the proper format, or if it contains errors resulting from Year 2000 difficulties, the exchange process can break down or otherwise cause the receiving system to produce errors or fail. Such data received from external parties is

outside an agency's control, but it can significantly impact the agency's ability to transact business. As part of their Y2K efforts, State organizations must take the following preventive measures: identify all data exchanges; work with data suppliers to ensure data received is in a compatible century-compliant format and is free of errors; and test to ensure data will work properly with remediated systems.

The OFT has worked with the Federal government to identify data exchanges between the two levels of government and began, in October 1997, to require agencies to identify and report on high priority data exchanges. In addition, the OFT issued a memorandum in June 1998 to State agency officials advising them to document their inquiries to data suppliers and providing them with instructions for responding to requests about the information agencies supply to other parties.

Among the agencies we visited, we found that most were in the process of establishing inventories of data exchanges. Tax has made significant progress in identifying, coordinating and testing data exchanges with two of its major business partners: Fleet Bank (Fleet) and Chase Manhattan Bank (Chase). Tax contracts with Fleet to process New York State personal income tax returns, and with Chase to collect and process State withholding taxes. Tax is completing its identification of data exchanges with other parties and is implementing a tracking system to monitor progress in this task. Parole has also made substantial progress in identifying its data exchange partners, and has taken steps to coordinate with those parties, and monitor progress toward ensuring that data received is reliable and compatible with Parole's systems. SED and DMV are in the initial stages of addressing data exchanges. At Corrections, we found that the agency has begun to work in this area, but that it has done so without compiling agency-wide inventories of data exchanges. We believe it is essential that management must first identify all such data exchanges in order to coordinate with all exchange partners and to monitor progress in ensuring data compatibility.

Our survey results were corroborated by observations during our site visits. Slightly more than half of the 80 agencies responding to our survey reported that they had completed an inventory of data exchanges and had begun coordinating with their data exchange partners. Twenty six (33 percent) of those agencies reported having developed a testing methodology to evaluate those exchanges, and 12 agencies (15 percent) reported having implemented such a methodology.

As a result of our discussions with agency officials, we concluded that a lack of progress on data exchanges resulted from a need to set priorities. Agency officials believe they must plan and execute remediation work on

internal systems before they investigate and resolve issues arising from contacts with external systems. Nonetheless, data exchanges pose a significant Y2K risk to the State, particularly for those organizations that rely heavily on sharing data with other entities. Therefore, addressing this issue must become a statewide priority. We recommend that the OFT focus additional attention on monitoring agency actions to make data exchanges Y2K compliant.

Response of OFT Officials to Audit: OFT officials responded that agencies have now completed inventories of data exchanges for the State's "Top 40" Priority Systems and for High Priority Systems. They also responded that as of December 1998, 24 percent of the 748 data exchanges for the Priority Systems and 36 percent of the 187 data exchanges for High Priority Systems are compliant. They added that if data exchange partners have not completed compliance efforts and adequate testing has not been completed, State agencies will be required to institute risk mitigation efforts.

Auditors' Comment: Continued monitoring and oversight of this high priority concern is warranted.

Embedded Systems

Equipment which provides vital support services, ranging from building heating and ventilation to building access security, is typically controlled by vendor-supplied computer microprocessors (chips) as well as computer code contained on the chips. An agency usually has only limited ability to reprogram or test systems run by such embedded chips. However, since basic functions affecting public health and safety could be at risk, management must determine whether or not the chips and the code are Y2K compliant.

There are four basic project phases related to assessing the continued reliability of equipment and devices which depend on embedded systems: taking an inventory of existing systems; investigating the systems for Y2K compliance; developing a strategy for systems' remediation; and testing to determine if remediated systems work correctly. The OFT and agency Y2K Project Managers determined that each agency should designate an Embedded Systems Manager to oversee the implementation of these project phases. In addition, the OFT provided a checklist to assist State agencies in developing their inventories and established an Embedded Systems Workgroup in January 1998 to facilitate agency efforts. In March 1998, the OFT provided training to Embedded Systems Managers in assessing embedded systems and in determining which systems would require testing. In June 1998, the OFT told State agency officials that they were expected to have identified all priority embedded systems by September 30, 1998.

The results of both our survey and our site visits indicate that most State entities remain in the early stages of examining their embedded systems and have not met the OFT's deadline for identifying all priority systems. Thirty-two (40 percent) of the 80 agencies responding to our survey said they had completed an inventory of their embedded systems, and 29 (36 percent) said they had developed a plan to investigate those systems. The OFT reports some improvement in the number of agencies that have compiled inventories of their priority systems as of the end of our fieldwork. OFT stated that, as of October 30, 1998, 52 agencies had provided the OFT with lists of priority embedded systems. The OFT does not require agencies to provide plans or schedules for addressing the Y2K compliance of their embedded systems.

We found that SED, Parole and DMV were in the process of establishing inventories of embedded systems; SED has begun to coordinate with some vendors. Tax had also just begun to address embedded systems, and had retained a consultant to assist in that work. Our concerns about Corrections approach to ensuring the compliance of embedded systems are consistent with our overall concerns that the agency's system of internal control is inadequate to provide assurance that compliance will be achieved.

As with data exchanges, we found that agencies' lack of progress to date in addressing Y2K compliance in embedded systems resulted from priority-setting at the agency level. Nonetheless, problems with embedded systems, such as telecommunications devices, and fire detection equipment, can pose a serious threat to an agency's ability to function at all, much less perform its mission critical tasks. For example, security surveillance devices, badge readers, parking lot gates and prison cell doors, may shut down if embedded systems cannot read the millennium date. We believe State organizations need to complete their investigation of embedded systems as soon as possible, and to coordinate with vendors to ensure that systems critical to agency operations are adequately tested and remediated as necessary. We recommend that OFT focus additional attention on agency efforts to bring embedded systems into Y2K compliance.

Response of OFT Officials to Audit: OFT officials responded that all agencies have completed inventories of embedded systems as of October 1998. They further indicated that 64 percent of assessments have been completed for the 714 priority embedded systems as of December 1998. OFT officials also responded that estimates show that only one in fifteen automated equipment items with embedded systems depend on a date/time function. They added that validating embedded systems can be accomplished by either testing or through vendor compliance statements.

According to OFT, agencies have identified replacement costs for priority embedded systems and are proceeding with remediation/replacement efforts; contingency plans for priority embedded systems are required by the second quarter of 1999.

Auditors' Comment: Continued monitoring and oversight of this high priority concern is warranted.

Contingency Planning

Contingency planning is an important management task necessary to ensure the continued operation of an organization's critical services or business processes. Because of the magnitude of Year 2000 projects, and the potential for unforeseen risks and system failures, the need for contingency planning takes on added significance.

In June 1998, the OFT asked State agencies to develop a list of all systems and equipment at risk of not being brought into compliance in a timely manner. In July 1998, the OFT requested that agencies develop a high-level contingency plan for items on that list and for any high priority systems that were either behind schedule, or were not scheduled to be completed until 1999. Detailed contingency plans are due in early 1999. However, none of the 80 agencies responding to our survey could provide us with substantive indication of contingency planning efforts, and most of the agencies we visited have not made significant efforts to develop contingency plans. In fact, officials at several of these agencies told us they did not intend to develop contingency plans. They stated that they believed that their Y2K projects were making progress and that they had ample time to handle contingencies should the need arise.

Of the five agencies we visited, only SED has developed a high-level contingency plan. DMV and Parole have not yet developed such plans, and Corrections and Tax officials indicate that they do not plan to develop a formal contingency plan for system failures. Corrections plans to use calendar year 1999 to identify and resolve any problems which may occur. Tax officials believe that their priority systems will be remediated before the Year 2000, and it would not be cost effective to complete a plan for only those lower priority systems which may be at risk.

Because of the potential for computer systems to fail as soon as they begin to encounter transactions with Year 2000 dates, we believe contingency and business continuity planning is an important management task which needs to be addressed immediately. The lack of such planning to date has resulted in a lost opportunity for the State to lower its overall Y2K risk from the failure of critical government operations as we approach the next century. Without such plans, agencies may not have enough time to prepare adequate alternatives for delivering services when failures occur.

Response of OFT Officials to Audit: OFT officials stated that agencies will test and finalize contingency plans by the second quarter of 1999. OFT and SEMO plan to coordinate agency contingency planning exercises in the third quarter of 1999. Plans will be on-site at the State's Emergency Operations Center in the fourth quarter of 1999.

Auditors' Comment: Continued monitoring and oversight of this high priority concern is warranted.

Recommendations

Office for Technology

7. Follow up with agencies to obtain explanations about the progress and problems associated with the testing phase of their Y2K projects.

8. Follow up on the Y2K project of the Department of Correctional Services to determine if any additional actions are needed because of the lack of a formal Y2K plan and the weaknesses in internal control procedures for testing remediated systems.

   (OFT officials did not specifically respond to recommendation number 7 or number 8. The reasons for this as well as our comments in reply are essentially the same as those provided on page 8 of this report after recommendation number 6.)

9. Require agencies to report to OFT on the status of their Y2K testing progress for critical and high priority systems.

   (OFT officials indicated that they have established standards for reporting compliance progress for all project steps, including testing.)

10. Provide for the independent validation or verification of the status of agency Y2K testing based upon risk factors that consider the importance of the systems and the effectiveness of established testing controls.

    (OFT officials indicated that independent validation and verification will be done for "Top 40" Priority Systems.)

Recommendations (Continued)

11. Focus additional attention and emphasis on monitoring agency actions to establish Y2K contingency plans and to make data exchanges and embedded systems Y2K compliant.

    (OFT officials outlined a number of steps focusing attention and emphasis on data exchanges and embedded systems.)

    Department of Taxation and Finance

12. Expedite efforts to make data exchanges and embedded systems Y2K compliant.

13. Develop OFT required high-level contingency plans and establish business continuity plans for important business and service functions that may be at risk should systems experience Y2K failures.

    (Department of Taxation and Finance officials agree with recommendations number 12 and number 13.)

    Department of Motor Vehicles

14. Document the results of Y2K testing activities performed by the Quality Assurance Unit.

15. Expedite efforts to make data exchanges and embedded systems Y2K compliant.

16. Develop OFT required high-level contingency plans and establish business continuity plans for important business and service functions that may be at risk should systems experience Y2K failures.

    (Department of Motor Vehicles officials agree with recommendations number 14 through number 16.)

    State Education Department

17. Establish deadlines for completing testing on high priority and critical systems. Construct a schedule and identify and provide necessary resources for completing testing by the deadlines.

Recommendations (Continued)

18. Expedite efforts to make data exchanges and embedded systems Y2K compliant.

19. Establish contingency plans for important business and service functions that may be at risk should systems experience Y2K failures.

(State Education Department officials agree with recommendations number 17 through number 19.)

Division of Parole

20. Document the design, scheduling and results of Y2K tests.

21. Expedite efforts to make data exchanges and embedded systems Y2K compliant.

22. Develop OFT required high-level contingency plans and establish business continuity plans for important business and service functions that may be at risk should systems experience Y2K failures.

(Division of Parole officials agree with recommendations number 20 through number 22.)

Department of Correctional Services

23. Work with OFT to determine whether any additional actions are needed to complete the Department's Y2K project in a timely and effective manner.

Recommendations (Continued)

24. Establish internal controls for aspects of the Y2K project concerning testing, data exchanges, embedded systems and contingency planning.

(Department of Correctional Services officials, while agreeing to continue to work with OFT, do not specifically address recommendation number 23. Officials disagree with aspects of recommendation number 24, particularly as it relates to controls over testing. Officials believe that their extensive use of standardized, reusable program modules, coupled with the experience of their journeyman programmers ensures a reliable testing methodology. The officials add that remediation of external data exchanges is complete and work on embedded systems and contingency plans continues.)

Auditors' Comments: We agree that use of standardized program modules assists in testing the remediation of Y2K code. However, during our visit to Correctional Services, officials could not provide us with plans, procedures and schedules supporting their testing methodology. We continue to believe that such items are necessary to assure management that systems are going to be Y2K compliant.

Significant OFT Actions in Preparing for Y2K: April 1996 - September 1998

- Establishing a statewide Steering Committee to address the Y2K problem and coordinate project activities (April 1996)
- Creating platform-based workgroups (June 1996) for sharing ideas, strategies and solutions for organizations with similar computing technologies
- Conducting a statewide risk assessment (September 1996) and identifying the State's top priority systems for achieving Y2K compliance (December 1996)
- Initiating quarterly status reporting for the State's top priority systems (April 1997) and other high priority applications (September 1997); instituting quarterly status meetings with executives, directors of information technology and Y2K project managers to discuss project progress (February 1998)
- Working with other State organizations to solve staffing issues related to the Y2K problem (April 1997)
- Working to develop centralized funding to allocate to agencies that maintain the State's critical and other high priority systems (January - June 1998)
- Establishing risk assessment teams comprising internal auditors from various agencies to assist in identifying and mitigating risk (March 1998)
- Raising local awareness by publishing a local government guide on solving the Y2K problem (April 1998) and co-hosting a Y2K teleconference with the Office of the Sate Comptroller that was broadcast to officials from local government, schools and fires districts at over 40 sites statewide (September 1998)
- Providing training on contingency planning to Y2K project managers (May 1998) and requiring agencies to identify high risk systems that may require contingency planning, and instructing them to develop the contingency plans in the first quarter of 1999 (June 1998)
- Expanding State agencies' quarterly reporting requirements to include the status of priority embedded systems (June 1998)
- Working with the New York State Department of Public Service and the State Emergency Management Office to assess utility preparedness and emergency response planning (July 1998)

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March 11, 1999

Mr. Jerry Barber
Audit Director
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Albany, NY 12236

Dear Mr. Barber:

The Office for Technology (OFT) has received the Office of the State Comptroller's draft audit report (No. 98-S-21) dated February 8, 1999. In accordance with Section 170 of the Executive Law, OFT is providing this letter in response.

New York State has made significant compliance progress since establishing the Year 2000 project in April 1996. January 1, 2000 is a fixed, non-negotiable deadline. In order to meet that deadline, compliance efforts are moving at a very fast pace. The audit findings are based on information gathered from a June 1998 survey and the review of five agencies that were concluded in October 1998. Half a year later, the audit findings do not reflect the State's current status and actions taken in critical project areas.

* Note

OFT's role is to facilitate and coordinate the State's Year 2000 compliance efforts. The audit recommends that OFT expand its role to include audit functions associated with testing, data exchange dependencies, legal liability and other project areas. Consistent with our project role and past practices, OFT is not functioning as the State's auditor for Year 2000. OFT offers the following in response to the seven audit areas:

- **Testing:** OFT has provided training for testing methodologies for mainframe applications, personal computers and embedded systems and established standards for reporting compliance progress for all project steps, including testing. While the State Risk Assessment Team has provided reviews of selected agencies, it is incumbent on agencies to manage the project phases and report compliance progress based on the

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* See State Comptrollers's Note, Appendix B-4

established standards. OFT is procuring an independent validation and verification review of the State's "Top 40" Priority Systems. Once an agency has reported 100% compliance, the selected vendor will conduct an automated review of remediated code and evaluate agencies' testing processes. Based on the available time and resources, OFT believes that it is more effective to validate overall compliance rather than delay agency compliance efforts by requiring audits of individual project phases, including testing.

- **Data Exchange Dependencies:** Agencies completed inventories of data exchanges for the State's "Top 40" Priority Systems in April 1997 and for High Priority Systems in October 1997. OFT has been monitoring data exchange compliance progress as part of the quarterly reporting process since October 1997. In order to adequately test data exchanges, our reciprocal federal, state, local and private partners must also complete compliance efforts for their respective systems. Consequently, like most public and private organizations worldwide, State agencies have scheduled the majority of data exchange tests for 1999. As of December 1998, 24% of the 748 data exchanges for State's "Top 40" Priority Systems and 36% of the 187 data exchanges for High Priority Systems, are compliant. In the event that data exchange partners have not completed their compliance efforts and adequate testing has not been completed, State agencies will be required to institute risk mitigation measures including firewalls, bridges, and translation programs or to suspend data exchanges with non-compliant partners.

- **Priority Embedded Systems:** All agencies have completed inventories as of October 1998 and 64% of the assessments have been completed for the 714 priority embedded systems as of December 1998. It is important to recognize that not all automated equipment contains embedded systems and, of those that do, estimates are that only one to fifteen percent may be dependant on a related date/time function. There are two alternatives for validating embedded system compliance; vendor compliance statements or testing. Unlike traditional computer systems, equipment containing embedded systems are designed to be self-contained and are difficult to test and testing can permanently disable the equipment and related system. Agencies have identified replacement costs for priority embedded systems and are proceeding with remediation/replacement efforts. Agencies are required to complete contingency plans for priority embedded systems by the second quarter 1999.

- **Contingency Planning:** OFT, in conjunction with the State Emergency Management Office (SEMO), developed, distributed, and provided training on the State's Year 2000 Contingency Planning Guide. The plan is based on the risk reduction, response and recovery guidelines established in the State's Emergency Response Plan. Agencies are required to complete contingency plans for all mission critical business processes including failure management strategies for priority computer systems, embedded systems, high-risk occupancies and critical external dependencies. Each agency has designated a Y2K Emergency Response Coordinator who serves as the primary contact for planning and response activities. Agencies will complete draft

contingency plans by the 1st quarter 1999 and test and finalize plans by the 2nd quarter 1999. OFT and SEMO will coordinate agency contingency planning exercises in the third quarter 1999. The plans will be on-site at the State's Emergency Operations Center (EOC) in the 4th quarter 1999 for the millenium transition.

- **Public Utility Infrastructure:** In an October 1998 order, the Public Service Commission established a July 1, 1999 deadline for Year 2000 (Y2K) readiness activities for all utility mission critical systems, including contingency plans for the State's electric, gas, telephone, water, steam and cable utilities. The order requires utilities to review their Y2K-related outreach efforts to communicate with outside entities, including suppliers, critical customers, and the public and to provide information on the actions utilities are taking to ensure Y2K readiness. It requires utilities to expand and enhance these efforts where necessary to provide more information on the steps utilities are taking to ensure Y2K readiness, and to submit a report to staff by December 31, 1998. In a February 1999 order, the Commission required utilities to file monthly status reports on their Y2K preparations with the Commission. PSC plans to conduct on-site reviews and participate in scheduled utility tests.

- **Legal Liability:** OFT, in conjunction with the Attorney General's Office, has provided agency counsel with training and guidelines on Y2K legal liability, due diligence requirements, NYS' Year 2000 Warrant Standard and the Year 2000 Information Disclosure Act. While the Attorney General's Office in conjunction with OFT, is responsible for reviewing requisite Y2K procurements, agencies and their counsel are responsible for evaluating potential legal liability for their respective projects. OFT and the Attorney General's Office will continue to serve as a resource for agencies regarding Y2K legal liability.

- **Y2K Compliance:** In November 1997, the State established our compliance definition in the NYS Year 2000 Warranty Standard which requires that products and services "be able to accurately process date/time data (including, but not limited to, calculating, comparing, and sequencing) from, into, and between the twentieth and twenty-first centuries, and the years 1999 and 2000, including leap year calculations." This standard also applies to the State's systems and equipment. OFT has provided clear guidelines to agencies regarding compliance reporting; 100% compliance means that systems have be remediated, tested and returned to production. As of December 1998, the State Risk Assessment Team has performed reviews for six of the agencies that maintain one or more of the State's Top 40 Priority Systems. OFT has clearly defined Y2K compliance and has instituted measures including the independent validation and verification, to assess Y2K compliance.

The State has prioritized its efforts in order to focus our time and resources on priority projects that impact public health, safety and welfare and the ability to deliver critical services. OFT's role is to facilitate and coordinate the State's effort and provide support for agency projects. Consistent with that role, OFT and the Year 2000 Risk

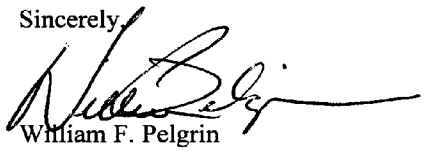
Assessment Team conducted statewide training for agency internal audit and internal control staff to provide "best practices" for mitigating risk. OFT promoted two fundamental principals; risk assessment reviews must not become an impediment to getting critical work done and that recommendations must be timely in order to add value to compliance projects.

The audit report included some of OFT's significant actions in preparing for Y2K. Attached is a complete list of OFT's Y2K project accomplishments from April 1996 through December 1998.

State agencies should be commended for their dedication and significant accomplishments over the past three years. As of December 1998, agencies have completed a total of 935 person years of effort to bring the State's priority systems into compliance. With less than tens months to go until the Year 2000, now, more than ever, we need to remain focused on the task at hand.

We look forward to continuing to work together to meet the State's "number one technology priority," Year 2000 compliance.

Sincerely,



William F. Pelgrin
Counsel

Attachment

* State Comptroller's Note

Certain matters addressed in the draft report were revised or deleted in the final report. Therefore, some agency comments included in Appendix B may relate to matters no longer contained in this report.

YEAR 2000 READINESS DISCLOSURE

NYS Office for Technology
Year 2000 Date Change Initiative
Project Accomplishments
April 1996 – December 1998

- **Year 2000 Date Change Initiative**: (April 1996) Established the Date Change Initiative to facilitate and coordinate New York State's millennium compliance efforts. The Office for Technology (then Governor's Task Force on IRM) initiated the project to promote a collaborative approach, reduce duplicative work efforts across agencies, identify common statewide issues and develop generalized solutions.

- **Statewide Steering Committee**: (April 1996) Established a steering committee to provide an inter-agency structure to develop statewide strategies to address the Year 2000 and coordinate project activities.

- **Platform-Based Work Groups**: (June 1996) Established platform based work groups; Mainframe, Mid-Range and PC/LAN-Based to provide a forum for sharing ideas, strategies and solutions for users with similar computing technologies.

- **Project Kick-Off Session**: (July 1996) Conducted a project kick-off meeting with agencies to raise awareness on the Year 2000 problem, outline project goals and objectives and discuss the need for a statewide risk assessment.

- **Year 2000 WEB Page**: (September 1996) Created Year 2000 WEB page to disseminate project information to state and local government and provide links to other federal and state Year 2000 sites.

- **Statewide Risk Assessment:** (September 1996) Agencies completed standardized risk assessments to identify business processes which are supported by automated systems that are not Year 2000 compliant. Agencies categorized each business process (high, medium or low) as to the importance of it's role in the agency's ability to fulfill their mission and deliver services.

- **Executive Awareness Seminar**: (November 1996) Conducted an awareness seminar for agency heads and executive deputies to define the Year 2000 problem and raise awareness. Peter de Jager, a world re-known expert, provided a two hour presentation on the nature, scope and impact of the problem on government if corrective action is not taken.

- **Centralized State Contracts**: (November 1996) The OFT issued a list of vendors available on the Office of General Services central State contract that offer Year 2000 services. The list was distributed to agencies and links established from the OFT Year 2000 WEB site to the OGS WEB site. The OFT also identified additional Year 2000 vendors, as recommended by the Work Groups, and began working with OGS to expedite placing them on State contract.

NYS Office for Technology
Year 2000 Date Change Initiative
Project Accomplishments
April 1996 – December 1998

- **Raising Local Government Awareness**: (December 1996) A letter was sent to local government officials from the Director of State Operations to raise awareness and provide general direction on a project methodology and risk assessment. This included a videotape of the Peter de Jager presentation from the November Executive Awareness Seminar.

- **Project Manager, Inventory and Contingency Plans**: (December 1996) Agencies were directed to designate a project manager, complete an inventory of applications and to identify those systems that may not be made Year 2000 compliant. Agencies were asked to develop contingency plans to continue to support business processes and services absent those automated systems.

- **Financing Proposal**: (December 1996) A financing proposal was submitted to the Director of the Division of the Budget requesting $50 million in Certificate of Participation funds over the next three years. The OFT began preparing a spending plan to allocate the funds across agencies. Funding surveys were sent to agencies to gather information in preparing this plan.

- **State's "Top 40" Priority Systems:** (December 1996) The OFT distributed a list of the State's "Top 40" priority systems that must be millennium compliant. The list is a product of: 1) group discussions with information resource managers from over 35 agencies and 2) an analysis of the agency risk assessments submitted to the OFT. Many factors were considered in identifying and prioritizing the systems including the impact on the public, revenue collections and the State's ability to support business processes and deliver services absent those systems.

- **Year 2000 Workshop and Vendor Fair** (February 1997): The OFT and the NYS Forum on IRM co-sponsored a workshop and vendor fair for State and local governments. The workshop included a vendor compliance panel discussion, agency case study presentations, a PC awareness session, and information regarding State contracts. The fair provided vendors with an opportunity to showcase Year 2000 tools and services to the agencies.

- **OGS Contract Templates for Year 2000 Consultants** (March 1997): The OFT assisted the Office of General Services in developing contract templates for Year 2000 consulting services. The templates provide agencies with a format and mechanism to procure project services through the OGS mini-bid process.

- **Data Exchange with the Federal Government** (March 1997) In December 1996, New York State initiated discussions with the Social Security Administration to coordinate Year 2000 and data exchange activities. The OFT conducted conference calls with federal government officials to discuss project schedules, coordination, data

YEAR 2000 READINESS DISCLOSURE

exchange standards and testing. The highlights are published on the OFT Year 2000 WEB site.

- **Instituted Quarterly Status Reports for "Top 40" Priority Systems** (April 1997): The OFT instituted quarterly status reports for the State's "Top 40" Priority Systems. Status surveys were issued to those agencies with priority systems to document the project size, plan, schedules and resources. The quarterly updates will provide a uniform format to monitor compliance progress.

- **Developing Strategies to Retain, Compensate and Recruit IRM Staff** (April 1997): The OFT is working with the Office of Employee Relations, Department of Civil Service and the Division of the Budget to develop strategies to retain and augment staff to work on Year 2000 projects. These include compensatory overtime, flexible work scheduling, telecommuting and temporary employment of retirees.

- **Establishing Local Government Year 2000 Work Group** (May 1997): The OFT established a Local Government Year 2000 Workgroup to coordinate project activities. The workgroup will be developing a plan to assist local government in their Year 2000 compliance efforts and to address State/Local data exchange dependencies.

- **Year 2000 Contract Language** (May 1997): The OFT is providing examples of year 2000 contract warranty language suggested for all technology related contracts. This information is published on the OFT Year 2000 WEB site.

- **Year 2000 Project Manager's Meetings** (June 1997): The OFT began holding bi-monthly meetings of all state agencies' Year 2000 Project Managers to disseminate information and coordinate project activities. At this first meeting, presentations were given by the steering committee and each platform work group. A survey solicited agencies' needs and topics for future sessions which included project management, planning, tracking/control mechanisms, compliance standards, vendor compliance, and testing strategies. The survey results are available on the OFT Year 2000 WEB page.

- **Governor's Moratorium** (July 1997): Governor Pataki issued an executive memorandum to commissioners and agency heads announcing Year 2000 as New York State's **Number One Technology Priority.** It invokes a moratorium on all new technology initiatives which impact an agency's ability to achieve Year 2000 compliance, other that those mandated by statewide directives or required by law, and directs that all purchases by the State of new software, systems, enhancements or equipment be Year 2000 compliant. The moratorium shall remain in effect until such time as an agency can ensure agency wide compliance.

NYS Office for Technology
Year 2000 Date Change Initiative
Project Accomplishments
April 1996 – December 1998

- **Staffing Options for Year 2000 Projects** (August 1997): On August 14, 1997, State Operation's issued a memorandum outlining options to retain, compensate and recruit staff to support Year 2000 projects. These staffing strategies include overtime compensation, extra service, temporary employment of IRM retirees and telecommuting. Agencies will review staffing options into their project plans and demonstrate the ability to fund the staffing options within existing resources.

- **Multi-State Coordination** (August 1997): NYS began participating in monthly conference calls with over 12 other states (including TX, PA, FL, MI, OH, WA, OR...) to share information, discuss strategies and develop solutions to address the Year 2000. NYS attends national Year 2000 seminars and conferences to share compliance approaches and progress.

- **Quarterly Status Reports for High Priority Systems** (September 1997): The 300+ high priority systems that are critical to agencies' ability to fulfill it's mission or deliver services were incorporated into the quarterly status reporting process. The OFT is monitoring compliance status for all Top Priority and High Priority Systems and is reporting progress to the Director of State Operations.

- **Joint Year 2000 Day with Government Technology Conference** (September 1997): The OFT worked with GTC to have a Year 2000 Training Day to which all state agency Year 2000 project managers could attend free of charge. OFT moderated the day's sessions presented by a variety of nationally known Year 2000 experts.

- **Executive Year 2000 Compliance Conference** (September 1997): The Governor's Office held a conference for all agency commissioners and executives to provide a forum to focus attention on the Governor's Year 2000 compliance directive, discuss policy issues and provide training.

- **Local Government Awareness Sessions** (September 1997): The Year 2000 Local Government Workgroup began making presentations at local government association conferences and meetings to raise awareness and assist local governments in addressing their Year 2000 problems. These will continue through 1998. A list of all presentations made are available on the OFT Year 2000 WEB site.

- **Federal/State Data Exchange Summit** (October 1997): New York State participated in the "Federal/State CIO Summit on Year 2000" hosted by the State of Pennsylvania. Forty-one states and twenty-one federal agencies met to discuss common Year 2000 issues and data exchange dependencies.

NYS Office for Technology
Year 2000 Date Change Initiative
Project Accomplishments
April 1996 – December 1998

- **Best Practices, Data Exchange and Warranty Language** (November 1997): At November's Year 2000 Project Managers Meeting, GIGA Information Services Group presented a session on best practices for project planning, vendor and supply chain management and embedded systems. The Office of General Services provided training on purchasing compliant products off of State Contract and NYS' Warranty Standard. OFT presented on NYS' participation in the State/Federal Data Exchange Summit.

- **Invitation to Bid for Y2K Audit Services** (November 1997): The OFT issued an invitation for bid for a qualified public accounting firm to provide an independent audit review of NYS' Year 2000 compliance efforts. The OFT did not receive any responses from qualified vendors.

- **$250 Million Statewide Cost Estimate** (December 1997): Agencies reported detailed project cost estimates within four categories; application systems, non-PC computer infrastructure, PCs and embedded systems. The total includes estimates for high, medium and low priority systems.

- **Embedded Systems and Legal Liability** (January 1998): At January's Year 2000 Project Managers Meeting, training was provided on embedded systems and legal liability. Each agency was required to designate an Embedded Systems Manager to coordinate statewide activities and these managers were invited to this meeting. Legal staff from all agencies were also invited to this meeting. Jeff Jinnett of LeBoeuf, Lamb, Greene & MacRae and the NYS Attorney General's Office provided agency counsel with an overview on legal liability, due diligence requirements and presented NYS' Warranty Standard. A panel made up of staff from the OFT, the Office of General Services, and the Office of Mental Retardation & Developmental Disabilities presented an introduction to dealing with embedded systems' Year 2000 problems.

- **$100 Million Funding Request** (January 1998): The OFT requested an additional $50 million dollars in centralized funding, bringing the total Y2K allocation request to $100 million. The centralized funding is to augment Top Priority and High Priority Projects.

- **Quarterly Compliance Status Meetings** (February 1998): The Governor's Office instituted quarterly status meetings with executives, IT directors and Y2K project managers for agencies that maintain "Top 40" Priority Systems which impact public health, safety and welfare. The Director of State Operations reports on compliance progress, outlines compliance goals for the next quarter and addresses obstacles to accelerating compliance efforts.

NYS Office for Technology
Year 2000 Date Change Initiative
Project Accomplishments
April 1996 – December 1998

- **Y2K Vendor Day** (February 1998): The OFT hosted an information and training day to showcase Year 2000 products and services available on State Contract. State and Local Government can access two categories of Y2K services; consulting services and "code factory" remediation services, which can be procured using an expedited min-bid process. Additionally, Y2K tools are available to purchase through OGS state contracts.

- **Federal Data Exchange Survey** (February 1998): OFT responded to the United States General Accounting Office's Survey of Year 2000 Electronic Data Exchange Issues. NYS reported 778 data exchanges with federal, state, local and private partners for "Top 40" Priority Systems.

- **Risk Assessment Team** (March 1998): NYS established a team of internal auditors from multiple state agencies to assist agencies in identifying and mitigating risk. The team, using the scope outlined in the November 1997 Invitation to Bid for Y2K Audit Services, will review project plans, systems, data dependencies and compliance progress for selected Top Priority Systems and provide agencies with a risk assessment.

- **Testing, Contingency Planning and Embedded Systems** (March 1998): March's Year 2000 Project Managers meeting provided training on testing strategies and contingency planning. The NYS Department of Taxation & Finance presented their testing strategy and the OFT outlined the statewide contingency planning procedures and forms. The first meeting of agencies' Embedded Systems Managers was held and CTA, Incorporated presented a session on determining compliance of embedded systems, how to obtain embedded chip compliance information and how much to independently test embedded systems. .

- **Legislative Hearings** (March 1998): The State Assembly held hearings on Year 2000 Technological Compliance. OTF provided testimony on NYS' project, organization structure, risk assessment, cost, compliance status and resource requirements. Five agencies that maintain "Top 40" Priority Systems also testified on their compliance efforts.

- **Staffing SWAT Team** (March 1998): A Staffing SWAT Team was established to address on-going staffing issues and expedite agency requests. As a result, statewide policies have been implemented to provide agencies with greater authority and flexibility to recruit, retain and compensate staff for compliance projects.

- **NYS Local Government Guide to Solving the Year 2000 Problem** (April 1998): The OFT published and distributed the "Guide to Solving Year 2000 Problems in

NYS Local Government" to assist local government with millennium compliance. The guide can be downloaded from the OFT Year 2000 WEB site and provides comprehensive information about the Year 2000 and resources available to local government.

- **Quarterly Status Meeting** (April 1998): The Director of State Operations met with agency executives, IT directors and Y2K project managers for agencies that maintain "Top 40" Priority Systems to report on compliance progress and outline compliance goals for the next quarter. Agencies achieved compliance progress goals for "Top 40" for the quarter. The Director also reported on staffing and funding policies that were implemented to assist agencies and accelerate compliance progress.

- **Contingency Planning & Expedited Procurement of Y2K Services** (May 1998): May's Year 2000 Project Managers Meeting provided a presentation on contingency planning by Management Support Technology. The Office of General Services discussed how to expedite procurement of Y2K services through the mini-bid process and the priority processing timeframes which all control agencies have agreed to for Year 2000 procurements. The Embedded Systems Managers met to share progress, discuss inventory issues and they were briefed on the OFT's plans to add High Priority Embedded Systems to the quarterly monitoring process for the quarter ending June 1998.

- **Funding Allocations for Priority Projects** (June 1998): A total of $117 million dollars in centralized funding was allocated to agencies that maintain "Top 40" and High Priority Systems. Projects were funded through the State's Millennium Compliance Account and proceeds from the sale of Certificates of Participation. Agencies have also been directed to re-allocate existing resources to address priority Year 2000 compliance projects.

- **Priority Embedded Systems** (June 1998): The quarterly compliance status reporting process was expanded to include priority embedded systems and equipment. Priority embedded systems and equipment are defined as those that may have an impact on public health, safety and welfare or an agencies' ability to fulfill its mission or deliver critical services. Agencies are required to report priority embedded systems and cost estimates no later than the 7th quarter ending September 1998.

- **Contingency Planning** (June 1998): Agencies were directed to identify and report "high risk" systems that may require contingency plans. "High risk" systems include: Top 40 with a estimated completion date beyond January 1, 1999; High Priority Systems that have an estimated completion date beyond April 1, 1999; Top 40 or High Priority Systems that not have not met progress goals for two consecutive quarters; or any system that may not be compliant prior to failure dates. Agencies

will be required to complete a Contingency Plan Assessment for these systems and develop detailed contingency plans in the first quarter of 1999.

- **Utility Preparedness and Emergency Response Planning** (July 1998): The Office for Technology met with the Department of Public Service and the State Emergency Management Office regarding utility preparedness and emergency response planning. The Department of Public Service is assessing utility preparedness for State regulated electric, gas, water, telecommunications and cable. The State Emergency Management Office is facilitating State and county emergency response assessments and planning for the Year 2000.

- **Federal/State Year 2000 Summit** (July 1998): New York State participated in a two day Federal/State Year 2000 Summit hosted by the National Governor's Association in Washington, DC. States shared project information and strategies to address the Year 2000. NYS presented a best practice on "Assisting Local Government with the Year 2000." John Koskinen of the President's Council on Year 2000 Conversion and administration officials discussed data exchange dependencies, reported on federal agency compliance progress and provided information regarding sector preparedness including infrastructure, financial services, health care, education and small business.

- **Quarterly Compliance Status Meeting** (August 1998): The Director of State Operations met with agency executives, IT directors and Y2K project managers that maintain "Top 40" Priority Systems to report on compliance progress and outline compliance goals for the next quarter. Agencies exceeded work estimate goals for the second consecutive quarter. The Director reported on efforts to expedite Year 2000 procurements and the State's Risk Assessment Team "Top 40" reviews.

- **Federal Congressional Y2k Hearings** (August 1998): Congressman Horn, Chairman of the House Subcommittee on Government Management, Information and Technology held a regional Hearing on Year 2000 Compliance in New York City on August 13, 1998. The Office for Technology provided testimony on New York State Year 2000 Compliance Project. Other regional government and private organizations testified including New York City, Connecticut, Westchester County, Con Edison and the Securities Industry Association.

- **Regional Infrastructure and Emergency Response Planning Meeting** (September 1998): The Office for Technology facilitated a regional infrastructure and emergency planning meeting. Participants included NYS Year 2000 Project Office, NYS Department of Public Service, NYC Year 2000 Project Office, NYC Emergency Management Office, NJ Year 2000 Project Office, Conn. Year 2000 Project Office, Metropolitan Transit Authority, Port Authority of NY & NJ, Westchester, Nassau and

Suffolk Counties. The group will continue to meet to focus on regional public safety and transportation issues and preparedness for the Year 2000.

- **Local Government Teleconference** (September 1998): The Office for Technology and the Office of the State Comptroller co-hosted a Year 2000 Local Government Teleconference. The two-hour, interactive session was broadcast to local government, school, and fire district officials at over 40 remote sites statewide. State and local officials presented a non-technical program on what the Year 2000 problem is, what may be at risk, how to address it and where to get help. A videotape of the program and handouts can be requested by contacting the Office of the State Comptroller's Division of Municipal Affairs.

- **Testing and Utility Preparedness** (September 1998): September's Statewide Project Manager's Meeting focused on testing and utility preparedness. GIGA Advisory Services, Inc. provided a training session on testing for the Year 2000. The session provided best practices for preparation, execution and validation phases for enterprise-wide testing. The Department of Public Service provided an overview of utility preparedness for the Year 2000 for State regulated electric, gas, water, telecommunication and cable.

- **Compliance with Federal "Year 2000 Information Disclosure Act" S. 2392** (October 1998): A federal law was enacted in October to encourage the disclosure and exchange of information about computer processing problems, solutions, test practices and test results related to the transition to the Year 2000. The Office for Technology urged state agencies and local governments to review this new federal law and assess any potential impact it may have on past and future Year 2000 statements made by the agency.

- **Quarterly Compliance Status Meeting** (November 1998) The Director of State Operations, met with agency executives, IT directors and Y2K project managers that maintain "Top 40" Priority Systems and for the first time, those that maintain High Priority Systems. All future meetings will include those agencies that maintain both Top 40 and High Priority Systems. The Director of State Operations reported on compliance progress and outlined goals for the next quarter. Status of Risk Assessment reviews, as well as utility preparedness was also discussed.

- **Independent Validation and Verification (IV&V)** (December 1998):Specifications will be issued by the Office for Technology in the first quarter of 1999 for independent review of all Top 40 priority systems. Reviews will focus on verification of code remediation and evaluation of the testing process and will be done once an agency has completed its Top 40 work.

NYS Office for Technology
Year 2000 Date Change Initiative
Project Accomplishments
April 1996 – December 1998

- **Year 2000 Compliance for High Risk Occupancy** (December 1998): The Office for Technology issued surveys to agencies asking them to identify any high risk occupancy space utilized by the agency in an effort to facilitate Year 2000 compliance of the State's most critical building/facility embedded systems/equipment. Upon receipt of the surveys, OFT will conduct a review of all identified space to identify compliance status of the building/facility system(s) equipment, as well as agency contingency planning efforts. Results and recommendations will be released during the first quarter of 1999.

- **Regulatory and Oversight Responsibilities** (December 1998): A panel of agencies presented best practices for Year 2000 regulatory and oversight efforts at the December Project Managers' meeting. Agencies should be working with their counsel's office, business units, Year 2000 project managers and public information officers to review and assess statutory, regulatory and oversight responsibilities regarding Year 2000 compliance and develop an outreach plan.

- **Regional Infrastructure and Emergency Response Work Group Meetings** (December 1998): This workgroup has been expanded since its first organizational meeting in September to include all regional partners in the New York City area. Work groups were formed focusing on specific transportation areas: rail, air, surface, and water; and public safety: police, fire and emergency response services. Goals of the work group are to identify NYC metropolitan area regional issues; develop coordination and communication plans across organizations; and address common infrastructure dependencies. In addition, two committees—Public Safety and Transportation--have been formed and will meet on a monthly basis.

STATE OF NEW YORK
DEPARTMENT OF TAXATION AND FINANCE
W. A. HARRIMAN CAMPUS
ALBANY, NY 12227

KEVIN F. MURRAY
EXECUTIVE DEPUTY COMMISSIONER

March 12, 1999

Mr. Jerry Barber
Audit Director
Office of the State Comptroller
Bureau of Management Audits
A. E. Smith State Office Building, 13th Floor
Albany, New York 12236

Dear Mr. Barber:

Thank you for the opportunity to review and comment on the Office of the State Comptroller's draft audit report entitled, "New York State Office for Technology and Selected State Agencies, New York's Preparation for the Year 2000: A Second Look (98-S-21)."

Since July 1998, when the OSC auditors gathered information relating to the Department of Taxation and Finance efforts to remediate the Year 2000 problem, the Department has continued to make significant progress in all areas of Year 2000 compliance. It has met or exceeded all of its target dates for compliance activities.

Recommendation 12:

Expedite efforts to make data exchanges and embedded system Y2K compliant.

Response:

As noted in the report, at the time of the review, the Department was already aggressively pursuing data exchange testing with its two private sector partners – Fleet Bank and Chase Manhattan Bank. Since then, the Department has also appointed a full-time Year 2000 data exchange project leader who will coordinate all data exchange testing. This person will work with system, user, and external partner staff to coordinate, schedule, and monitor all remaining data exchange tasks. The Department is using a risk based approach to data exchange testing. We have a written standard for high risk exchanges and will use this to prioritize our exchange test planning with our partners.

The report notes that as of July 1998, the Department had begun to develop an inventory of embedded systems and had hired a consultant to assist in identifying remediation requirements. We have now completed the inventory as well as risk assessment and have taken the necessary steps to remediate problems.

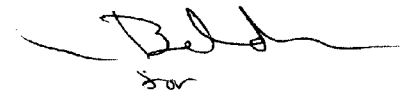
Recommendation 13:

Develop OFT required high-level contingency plans and establish business continuity plans for important business and service functions that may be at risk should systems experience Y2K failures.

Response:

We agree with the report's recommendations regarding the need for contingency planning to ensure continuity of important business functions. There appears to have been a misunderstanding with respect to our commitment to develop such plans. While we were not developing the plans at the time of the review, it has been our intention to do so. As of February 1999, we have initiated a Department-wide contingency planning process and have designated a Contingency Planning Coordinator, consistent with the model developed by the Office for Technology (OFT) and the State Emergency Management Office (SEMO). The Department is committed to meeting the OFT schedule for this project.

Sincerely,



Kevin F. Murray
Executive Deputy Commissioner

STATE OF NEW YORK
DEPARTMENT OF MOTOR VEHICLES
EMPIRE STATE PLAZA
ALBANY NEW YORK 12228

RICHARD E. JACKSON, JR.
COMMISSIONER

GREGORY J. KLINE
DEPUTY COMMISSIONER
FOR ADMINISTRATION

March 8, 1999

Mr. Jerry Barber
Audit Director
Office of the State Comptroller
Division of Management Audit & State
Financial Services
A.E. Smith State Office Building
Albany, NY 12236

Dear Mr. Barber:

Attached is the Department of Motor Vehicles' response to the draft audit report on New York's Preparation for the Year 2000: A Second Look (98-S-21).

If any additional information is required, please contact me at (518) 474-6876.

Sincerely,

Gregory J. Kline
Deputy Commissioner

GJK:bj
Attachment
cc: James G. Natoli, Chairperson
New York State Office for Technology
State Capitol
Albany, NY 12224

40% Pre-Consumer Content, 10% Post Consumer Content

The following is a Year 2000 Readiness Disclosure and the Department of Motor Vehicles' response to the audit conducted by the Office of the State Comptroller, entitled "New York's Preparation for the Year 2000: A Second Look."

We have made significant progress at the Department of Motor Vehicles since your audit. Your specific recommendations are addressed below:

"Document the results of Y2K testing activities performed by the Quality Assurance Unit."

- During our early year 2000 testing efforts, our documentation did not adequately reflect the thoroughness of our testing activities. We have implemented improvements in our testing documentation procedures since that time, and are now revisiting the earlier testing documentation to make it more complete.

"Expedite efforts to make data exchanges and embedded systems Y2K compliant."

We have:

- Identified the external data interfaces for over 90% of the applications in our statewide priority mainframe systems and expect to identify the remaining interfaces by the end of the first quarter of this year.

- Developed standardized language for letters to external suppliers and customers of electronic data. Letters to external suppliers of electronic data include an "Electronic Data Exchange Confirmation Form" which asks them to provide the following information for their systems:

    1. Verification of the specific dates and their formats.
    2. Verification that they will not make any changes to the format of the data.
    3. Confirmation that their systems that supply data to us will correctly determine dates before, during, and after the Year 2000, including leap year calculations.

- Done a pilot mailing to determine the efficacy of our letters.

- Designed a database for ready access to external data customer and supplier data to monitor our progress. We are updating the database as we perform each mailing.

- Completed our inventory of embedded systems.

- Assessed over 80% of our embedded systems for Year 2000 compliance. Non-compliant systems are being upgraded, replaced or retired as we proceed with our assessment process. We continue to pursue compliancy data on the other 20%.

"Develop OFT-required high-level contingency plans and establish business continuity plans for important business and service functions that may be at risk should systems experience Y2K failures."

- We provided Year 2000 Contingency Plan Assessment forms for those top-priority systems whose estimated completion date for Year 2000 compliance work was after 1/1/99.

- We have formed a Contingency Management Team and designated a Contingency Planning Coordinator. The CTM consists of 10 high-level managers who will establish the parameters, priorities, and policies for the Agency's contingency planning effort. The CMT will guide the operational-level Contingency Planning Teams in developing realistic plans for handling any Year 2000 problems that may arise as we move into the next century.

Although we have made a great deal of progress since the audit, we continue to expedite our efforts and closely monitor our progress.

THE STATE EDUCATION DEPARTMENT / THE UNIVERSITY OF THE STATE OF NEW YORK / ALBANY, NY 12234

Chief Operating Officer
Tel. (518) 474-2547
Fax (518) 473-2827
E-mail: rcate@mail.nysed.gov

March 8, 1999

Mr. Jerry Barber
Audit Director
Office of the State Comptroller
Alfred E. Smith State Office Building
Albany, New York 12236

Dear Mr. Barber:

I am responding to your letter of February 8, 1999 transmitting the State Comptroller's draft report, New York's Preparation for the Year 2000: A Second Look (98-S-21). The following comments relate to the recommendations pertaining to the State Education Department.

17. **Establish deadlines for completing testing on high priority and critical systems. Construct a schedule and identify and provide necessary resources for completing testing by the deadlines.**

We agree with the recommendation. We have established a testing schedule initially addressing our critical Top 40 systems, then our High Priority systems followed by the remainder of our systems. We have established a Year 2000 workgroup consisting of nine individuals dedicated to this task.

18. **Expedite efforts to make data exchanges and embedded systems Y2K compliant.**

We agree with the recommendation. The majority of our data exchanges are Y2K compliant and we are continuing to make progress in this area. Prior to your work on site our embedded building systems had been inventoried and we had begun the process of replacing those found deficient. We have since engaged two vendors to assist in our technical embedded chip efforts. One vendor is auditing each of the microcomputer models used in the Department. The other is reporting on our network and related hardware items such as servers, hubs and routers.

19. **Establish contingency plans for important business and service functions that may be at risk should systems experience Y2K failures.**

We agree with the recommendation. As was cited in the audit report, SED had developed a high-level contingency plan. We are continuing with this process. We are using both redundant systems and alternative business plans to assure the continued operation of our critical systems.

If you have any questions, please contact Lynn Humiston at 486-2348.

Sincerely,

Richard H. Cate

cc: James G. Natoli
Lynn Humiston

STATE OF NEW YORK
EXECUTIVE DEPARTMENT
DIVISION OF PAROLE
97 CENTRAL AVENUE
ALBANY, NEW YORK 12206

BRION D. TRAVIS
CHAIRMAN

JOSEPH J. GAWLOSKI
EXECUTIVE DIRECTOR

OFFICE OF THE STATE COMPTROLLER
MAR 15 1999
ROBERT H. ATTMORE
DEPUTY COMPTROLLER

March 10, 1999

Mr. Robert H. Altmore
Deputy Comptroller
Division of Management Audit
and State Financial Services
Office of the State Comptroller
Alfred E. Smith Office Building
Albany, NY 12236

Dear Mr. Altmore:

I appreciate the opportunity to respond to the State Comptroller's audit findings as they pertain to the Division of Parole, on "New York's Preparation for the Year 2000: A Second Look" Report 98-5-21.

The Division of Parole has taken a very serious approach to Y2K readiness and is pleased that the audit determined that "Parole has established an adequate infrastructure for remediating its computer systems for Y2K compliance". In fact as of January 1, 1999, we have been able to certify Y2K compliance for all three of our top priority systems (including VIOLATORS, which is one of the State's overall top 40 systems).

This compliance was achieved despite the realities of a serious "brain drain" to other State agencies, which has served to cause vacancies in half of our MIS applications programmer positions since the summer of 1998.

To assist staff in achieving this critical goal, the provision of overtime and the use of an outside consultant through the backdrop contract mini-bid process has been employed. In fact, additional code brought into compliance by Parole staff has been given to the consultant for compliance testing, to ensure that no problems exist.

In relation to the specific recommendations of the audit, we respond as follows:

1) Document the design, scheduling and results of Y2K tests.

We concur that we need to be more vigilant in this area and believe that we will be able to do so as new MIS staff comes on board. The code that was remediated and tested by the outside consultant (which represents one-half of all agency code), is documented and available for the Comptroller's review if required. This remediation had not yet occurred but was planned when the audit was conducted last fall.

2) Expedite efforts to make data exchanges and embedded systems Y2K compliant.

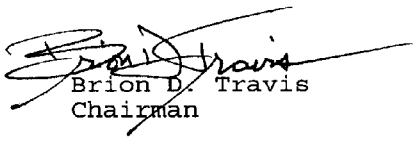
We concur that we need to continue our progress in this area and consistent with recommendations made by the Office for Technology at the "Millennium Alert Conference", the Division's Internal Audit Unit will be examining efforts in the Embedded Systems area in the next few months.

3) Develop OFT - required high-level contingency plans and establish contingency plans for important business and service functions that may be at risk should systems experience Y2K failure.

We are in the process of developing this plan which is required to be completed March 31, 1999.

Again, thank you for your feedback in this impacted area. Please call me if you have any questions.

Sincerely,



Brion D. Travis
Chairman

STATE OF NEW YORK
DEPARTMENT OF CORRECTIONAL SERVICES
THE HARRIMAN STATE CAMPUS
1220 WASHINGTON AVENUE
ALBANY, N.Y. 12226-2050

GLENN S. GOORD
COMMISSIONER

March 10, 1999

Mr. Jerry Barber
Audit Director
Office of the State Comptroller
Bureau of Management Audit
Alfred E. Smith State Office Building
Washington Avenue
Albany, New York 12236

Re: Audit Report 98-S-21
New York's Preparation for the
Year 2000: A Second Look,
Report 98-S-21

Dear Mr. Barber:

In accordance with Section 170 of the Executive Law and in response to your correspondence of November 19, 1998, attached is the Department's reply to the Draft Audit of New York's Preparation for the Year 2000: A Second Look, Report 98-S-21.

We have complied with the provisions of the Budget Policy and Reporting Manual, item B-410 by forwarding two copies of this response to the Division of the Budget on March 2, 1999.

Sincerely,

Glenn S. Goord
Commissioner

Attachment

STATE OF NEW YORK
DEPARTMENT OF CORRECTIONAL SERVICES
THE HARRIMAN STATE CAMPUS
1220 WASHINGTON AVENUE
ALBANY, N.Y. 12226-2050

GLENN S. GOORD
COMMISSIONER

RICHARD D. ROY
ASSISTANT COMMISSIONER

March 2, 1999

Mr. Jerry Barber
Audit Director
State of New York
Office of the State Comptroller
Alfred E. Smith State Office Building
Albany, New York 12236

Dear Mr. Barber,

I am writing in response to your draft audit of New York's Preparation for Year 2000: A Second Look, Report 98-S-21 on February 8, 1999. I have to take issue with your conclusions and with several of your gratuitous comments. While I am not offering you an invitation to return and disrupt our process, I do have to point out that if you spent a little more time in your review of our process you would better understand our position concerning our Year 2000 project.

Recommendation 23. Work with OFT to determine whether any additional actions are needed to complete the Department's Y2K project in a timely and effective manner.

Department Response

The Department continues to cooperate with the OFT on all aspects of the Year 2000 project. Four of the Department's systems are on the State's list of Top 40 Priority Systems. Three of four of those are completely remediated. Remediation of the fourth will be completed by the end of April 1999. Furthermore, remediation of the Department's High Priority Systems is nearly complete as well. By the end of April 1999 all of the Department's mainframe-based computer systems will be fully remediated. The only remediation programming left after April 1999 will be to address three in-house developed PC-based systems. These PC-based systems will be remediated by August 31, 1999.

Recommendation 24. Establish internal controls for aspects of the Y2K project concerning testing, data exchanges, embedded systems and contingency planning.

Department Response

The Department disagrees with the assessment that "Corrections had not established the internal controls necessary to adequately evaluate the testing of remediated systems." Our strategy for remediation was a clear and simple strategy developed by our programming managers. We make extensive use of standardized, reusable program modules - in this case our Date Calculation module - that all other programs must use. This module has been extensively tested to show that it properly calculates dates. As a follow-up to the visits by the OSC team, we provided test results documenting correct results for all of the dates listed in the OFT Y2K "Important Dates to Test" document.

Furthermore, should it ever be determined that it does have a flaw in its logic, fixing that single module propagates the fix to any and all programs that might have been negatively affected. Our programming practices require programmers to use this module in their systems. We are confident that this testing methodology is as reliable as any process you proscribe. We consider the concept of functional subroutines (or "reusable code" in more modern lingo) to be the ultimate form of internal controls. Using a single, well-tested Date Computation module is far superior to redundant or duplicative logic no matter how well tested it might be.

Our remediation project was performed in-house by staff responsible for day-to-day maintenance of our applications. All of the applications are under active maintenance due to the Department's constant growth in both size and complexity. These journeyman programmers are quite familiar with the internal operations of the systems and the testing of them. They do the bulk of our testing work in the same manner they tested the remediated programs. Had we contracted out our remediation effort, we would have proscribed a more rigorously documented testing methodology. Our experience over the last dozen years leaves us confident that our methodology results in well-tested programs. The Independent Validation and Verification process put forth by the OFT should further address your concerns. The Department will cooperate fully with the OFT on the IV&V which is expected to begin this process in late Spring or early Summer.

The remediation of external data exchanges has been considered a minor issue in our Y2K project. All were addressed with windowing techniques as each subsystem was remediated. During your review, you identified one file we receive from Parole as missing from our file exchange binder. You inquired about the status of that file/program vis-à-vis remediation and you were told that the program that processes the file had been remediated and windowing techniques had been applied against the file. This technique was documented in the Year 2000 Changes document for the RPV State Ready system which processes this file. The change document was prepared in October of 1997 and also documents the requirement that should Parole decide in the future to alter the file format to expand the date, we would need to modify the program to remove the windowing logic and use the expanded date directly. This fix would be simple and we have no reason to believe that Parole plans to alter this file. The date(s) in this file are unambiguous and the windowing techniques applied will work far into the future. The change document was available to you during your review.

The Department's review of embedded systems continues. Your visit came at the beginning of our planning process. We gave you the results of our first cut of an inventory process. In our preliminary response, we agreed that we needed to do more. The statewide contingency planning will adequately focus further attention on the embedded systems issue. It is in this area that I resent your gratuitous comment about prison gates not properly working. I can only assume that this was something you added for its potential shock value and is actually quite silly.

The Department will participate fully in the Statewide contingency planning process mandated by the OFT and SEMO. The Department has established a central coordination group for contingency planning and is in the process of forming Hub-level emergency response teams that will participate in the development of contingency plans. These teams will be the primary means of disseminating the plans and will be a key component in the Department's communications plan.

March 2, 1999

The Department has and continues to make major efforts to address Year 2000 concerns. Other than the impact of external issues beyond our control, we would hope the century rollover will be of no greater concern than the beginning of any other year. Our contingency plans will provide for those external factors such as power failures, transportation issues, etc.

Sincerely,

G. Ronald Courington
Director of MIS/Research

cc: Commissioner Goord, Department of Correctional Services
Chairperson Natoli, Office for Technology
Commissioner Mills, Department of Education
Commissioner Urbach, Department of Taxation and Finance
Commissioner Jackson, Department of Motor Vehicles
Chairman Travis, Division of Parole