

AUDIT REPORT



CITY OF NEW YORK
OFFICE OF THE COMPTROLLER
BUREAU OF FINANCIAL AUDIT
WILLIAM C. THOMPSON, JR., COMPTROLLER

Audit Report on the Development and Implementation of the Electronic Death Registration System By the Department of Health and Mental Hygiene

7A03-073

June 23, 2003



THE CITY OF NEW YORK
OFFICE OF THE COMPTROLLER
1 CENTRE STREET
NEW YORK, N.Y. 10007-2341

WILLIAM C. THOMPSON, JR.
COMPTROLLER

To the Citizens of the City of New York

Ladies and Gentlemen:

In accordance with the Comptroller's responsibilities contained in Chapter 5, § 93, of the New York City Charter, my office has performed an audit on the development and implementation of the Electronic Death Registration System by the Department of Health and Mental Hygiene. The results of our audit, which are presented in this report, have been discussed with officials from Department of Health and Mental Hygiene, and their comments have been considered in preparing this report.

Audits such as this provide a means of ensuring that City agencies are developing computer applications in an efficient, timely, and cost-effective manner.

I trust that this report contains information that is of interest to you. If you have any questions concerning this report, please contact my audit bureau at 212-669-3747 or e-mail us at audit@Comptroller.nyc.gov.

Very truly yours,

William C. Thompson, Jr.

William C. Thompson, Jr.

Report: 7A03-073
Filed: June 23, 2003

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***The City of New York
Office of the Comptroller
Bureau of Financial Audit***

**Audit Report on the
Development and Implementation of the
Electronic Death Registration System
By the Department of Health and Mental Hygiene**

7A03-073

AUDIT REPORT IN BRIEF

We performed an audit on the development and implementation of the Department of Health and Mental Hygiene's Electronic Death Registration System. The system was designed to use Internet technology to enable a completely automated death registration and certification process, with capabilities of printing death certificates, and permits for burial, cremation, and transportation of human remains.

Audit Findings and Conclusions

The Electronic Death Registration System does not exist as a functioning system; therefore, we were unable to determine whether the initial business and system requirements were met, whether the design allows for future enhancements and upgrades, and whether the system's overall goals will be met. In addition, the method used to procure system development services from IBM was inappropriate for a project of this magnitude; the Department did not employ a formal systems development methodology or an independent quality assurance consultant during the IBM development period; and the Department presented inaccurate information on the progress of system development in the Mayor's Management Report (MMR).

Audit Recommendations

To address these issues, the Department should:

- Ensure that it follows all applicable Procurement Policy Board (PPB) Rules in its procurements. In that regard, all large systems development projects should be awarded by competitive sealed proposals and result in a formal contract that is registered with the Comptroller's Office. Such contracts should contain specific deliverables with due dates and related costs as well as penalties for nonperformance;

- Comply with all applicable provisions of Comptroller's Directive 18 when developing systems. In that regard, the Department should: employ a formal systems development methodology; engage an independent quality assurance consultant; and ensure that executive management support and sponsorship and an experienced project manager are in place to oversee and coordinate the development process; and
- Ensure that it provides accurate information to the Mayor's Office of Operations for inclusion in the MMR.

INTRODUCTION

Background

The Department of Health and Mental Hygiene (Department) was created in 2002 by a merger of the Department of Health (DOH) and the Department of Mental Health, Mental Retardation and Alcoholism Services. The Department's mission is to promote and protect the health and mental health of all City residents through health promotion and disease prevention programs, and enforcement of City health regulations. Department programs and activities include: providing health information and laboratory services; performing disease investigations and surveillance; inspecting, permitting, licensing, and monitoring a wide range of enterprises related to public health; maintaining the City's health-related vital statistics; and registering and issuing birth and death certificates.

The Burial-Death Registration Unit (Registration Unit) records information on each death in the Department's computer system and issues certified death certificates and permits for the burial, cremation, and transportation of human remains.

In 1998, the Department began a system development initiative known as the Electronic Death Registration System (EDRS) to automate the functions of the Registration Unit. According to the Department's evaluation of EDRS dated April 15, 2000, "The Electronic Death Registration System was designed to use Internet technology to enable a completely automated death registration and certification process. Information would be entered at the source principally by hospitals, physicians, funeral directors, and medical examiners. The information would be certified by the Department of Health (DOH) staff, and would produce burial permits and death certificates."

The Department hired the IBM Corporation (IBM) to provide technical and consulting services for the design and implementation of EDRS. The services provided by IBM included documenting the business requirements, creating a system design and prototype application, and developing security architecture for the system. According to documentation provided by the Department, IBM was paid \$3.2 million for their work on the EDRS project. However, as of 2003, EDRS is still not developed, and the Department has engaged another firm, Dynamic Services International (DSI) to develop the system at an additional cost of \$1.8 million.

Objectives

This audit's objectives were to determine whether:

- The Department followed a structured methodology when developing EDRS;
- EDRS meets the initial business and systems requirements;
- The system design allows for future enhancements and upgrades;
- EDRS, as a finished product, will meet overall goals as stated in the system justification; and
- The Department complied with all relevant Procurement Policy Board (PPB) Rules.

Scope and Methodology

Our fieldwork was conducted from August 2002 through December 2002. To achieve our objectives, we: (1) interviewed Department officials; (2) conducted a walk-through of the current Death Registrations operation; (3) reviewed project specifications documents, project proposals, contracts, purchase orders, and other EDRS-related material.

To meet our audit objectives, we used Comptroller's Internal Control and Accountability Directive 18, Guidelines for the Management, Protection and Control of Agency Information and Information Processing Systems (Directive 18), as a criterion for this audit. In addition, we reviewed the following:

- *Electronic Death Registration Standards and Guidelines, Version 1.1*, published by the National Association for Public Health Statistics and Information Systems (NAPHSIS);
- *Specifications for Help Screens, Prompts, Queries, and Processing Interface on an Electronic Death Certificate*, published by the National Center for Health Statistics (NCHS);
- Provisions in the PPB Rules; and
- Relevant sections of the New York City Charter.

This audit was conducted in accordance with generally accepted government auditing standards (GAGAS) and included tests of the records and other auditing procedures considered necessary. This audit was performed in accordance with the audit responsibilities of the City Comptroller as set forth in Chapter 5, § 93, of the New York City Charter.

Discussion of Audit Results

The matters covered in this report were discussed with Department officials during and at the conclusion of this audit. A preliminary draft report was sent to Department officials and discussed at an exit conference held on April 3, 2003. On April 11, 2003, we submitted a draft report to Department officials with a request for comments. We received a written response from the Department on April 25, 2003. The Department partially agreed with the audit's findings and recommendations stating:

“We acknowledge that there were a number of problems in the original [Department] effort to implement an electronic death registration system. Some of the comments made in this report about this effort are justified, though others are overstated.”

The full text of the Department's comments is included as an Addendum to this report.

FINDINGS

Department officials stated that EDRS does not exist as a functioning system; therefore, we were unable to determine whether: EDRS meets the initial business and systems requirements; the system design allows for future enhancements and upgrades; EDRS, as a finished product, will meet overall goals as stated in the system justification.

With regard to the PPB Rules, we found that the method used to procure services from IBM was inappropriate for a project of this magnitude and contributed to the failure to develop EDRS despite the payment of more than \$3.2 million to IBM. In fact, the Department anticipates spending an additional \$1.8 million to develop the system, using another vendor.

Moreover, in its attempt to develop EDRS, the Department did not employ a formal systems development methodology or an independent quality assurance consultant, as specified in Directive 18. We believe that the lack of a formal systems development methodology combined with the absence of independent oversight contributed to the apparent failure of this project.

Finally, even though Department officials stated that EDRS does not exist as a functioning system, the information presented to the public in the Mayor's Management Report (MMR) from 1999 through 2001 gives the impression that the development of the system was progressing and that the Department was ready for "full implementation of the system" as early as December 1999.

These issues are discussed in detail in the following sections of this report.

Inappropriate Procurement Practices

The first step in a systems development project is determining the needs of the agency and developing the specifications and business requirements of the system. This information is used to prepare a Request for Proposal (RFP) to solicit vendor proposals. According to the PPB Rules, "procurement by competitive sealed proposals is the preferred method for the procurement of non-commodity data processing equipment, products and services." The agency reviews the proposals, selects, and then contracts with a vendor to develop the system. The contract would contain specific deliverables with due dates, related costs, and penalties for nonperformance. However, the Department followed none of these procedures for EDRS.

In the case of EDRS, the Department entered into a "Customer Agreement" with IBM in 1998 through an existing New York State Computer Services Agreement. Under the Customer Agreement, IBM was to provide technical and consulting services to the Department to design and implement the first phase of EDRS, which included:

- Requirements definition for the complete EDRS system;
- Design of the EDRS application architecture;

- Implementation of the EDRS application architecture;
- Web-enabled death registration, to be used by funeral directors, physicians, and medical examiners; and
- Web-enabled printing of death certificates and burial permits to be used by City registrars.

The arrangement with IBM was based on billable hours rather than on specific deliverables, making it difficult both to control costs and to offer IBM an incentive to produce deliverables within prescribed deadlines. In fact, the initial arrangement with IBM indicated that 2,585 hours were to be spent on the project at a total labor cost of \$452,187. This was increased to 8,805 hours, and then to 15,855 hours, for a total labor cost of \$3,149,543. Based on documentation provided by the Department, the IBM agreement was modified at least 13 times, which added to the original scope of work and thereby increased project costs and extended the estimated completion date.

Although there was a formal agreement between IBM and the Department, Department officials never presented that agreement or any of its modifications to the Comptroller's Office for registration, as required by the City Charter. The Comptroller's Office would not have registered this agreement since it was not competitively awarded. The Comptroller's Office would have also shared concerns that the agreement did not contain specific deliverables with due dates and related costs, and did not contain penalties for nonperformance. In addition, the Department did not provide documentation showing that it followed a "mini-bid" process, as required by New York State Procurement Council guidelines. Under the mini-bid process, bids are obtained from vendors on a pre-approved list maintained by the New York State Office of General Services. Moreover, the procurement files contained a document, signed by the Agency Chief Contracting Officer (ACCO), stating that "appropriate market research and/or price analysis has been conducted in order to determine that the price offered via the New York State contract is lower than the prevailing market price." However, the Department's procurement files did not contain documentation of research or analysis performed that would have made it possible for the ACCO to reach his conclusion.

By ignoring the City's normal procurement practices, the Department violated its obligation to encourage competition, prevent favoritism, and obtain the best value in the interest of the City and the taxpayers. Despite having paid IBM more than \$3.2 million (including labor costs and equipment), EDRS—in development since 1998—is not complete. In fact, the Department is in the process of entering into a \$1.8 million contract with another vendor, DSI, to continue the development and implementation of EDRS.

Department Response:

"As mentioned in the audit, the preferred method for identifying computer systems consultants is to prepare system specifications and business requirements that are included in a Request for Proposals, to solicit vendors. However, at the time that IBM was retained by the agency in August of 1999, the agency was not

in a position to specify in detail sufficient for an RFP the needs and scope of the project. The agency therefore was not in a position to prepare a contract with specific deliverables, due dates, related costs, and penalties for non-performance. The arrangement with IBM, therefore, was based on billable hours.

“IBM was retained to assist DOH in preparing a needs assessment; i.e., defining and documenting the business processes, work rules, and system requirements of the death registry system. IBM therefore created a system design and prototype application based on the needs assessment. This work was used by DOH in developing the project definition for the new solicitation to implement the EDR system.

“The Comptroller is correct in noting that the agreement with IBM was not presented for registration. This was neither a requirement nor standard procedure. The Department had been following the procedure set down by DCAS for purchases off State OGS contracts; that is, present the Purchase Order to DCAS for processing. The Comptroller knew that procurements from State contracts were not required to be submitted for registration, although some agencies did so.

“A new process has since been agreed to in conversations between MOC, the Law Department and the Comptroller. An ‘Interim Process for Intergovernmental Procurement Transactions,’ promulgated in a memorandum from MOC dated September 5, 2002, now calls for Comptroller registration.

“Market research was conducted by the Department at the time that the Purchase Orders were set up. The program responsible for this procurement at the time researched eight computer consultant firms in the State OGS list. IBM’s prices for hourly services for the required systems analysts were the lowest of the eight surveyed. Based on this survey the ACCO determined, and DCAS accepted, that appropriate market research had been conducted.

“The Department did not ignore the City’s normal procurement practices; rather the Department followed the procedures established at the time. In addition, given the unknowns surrounding the needs assessment of EDRS in 1999, the Department at that time determined that a fully specified RFP was not appropriate at such an early stage in the development of its EDR system.”

Auditor Comment:

If, as the Department contends, it was not “in a position to specify in detail sufficient for an RFP the needs and scope of the project” when IBM was originally hired, the Department should have solicited vendors and entered into a formal contract to continue EDRS development once IBM completed the needs assessment (defining and documenting the business processes, work rules, and system requirements). Instead, the Department chose to continue development

using IBM through billable-hours, rather than through a formal contract with specific deliverable, due dates, related costs, and non-performance penalties.

In addition, the Department contends that “market research was conducted at the time that the Purchase orders were set up.” However, the documents provided by the Department showed only the names of vendors with various dollar amounts. Details describing the process used for examining and evaluating the proposed prices were not disclosed, and the reasons that the Department selected the specific vendor were not part of the documentation.

Furthermore, the Department is incorrect in its assertion that registration of these agreements was not required because DOHMH had used, albeit improperly, New York State contracts. City Charter Sections 93(p) and 328(a) require that all contracts and agreements be registered by the Comptroller’s Office prior to implementation.

Failure to Follow Directive 18

The Department did not employ a formal systems development methodology in its attempts to develop EDRS. Directive 18 states that:

“The risks inherent in agency systems development projects can be significantly alleviated by conducting them in accordance with a formal systems development methodology. Such methodologies help insure that system development efforts are conducted in a structured, logical, organized, and efficient manner and help insure that systems meet their objectives, and are developed within budget and time constraints.”

In addition, Directive 18 states that engaging “an independent quality assurance consultant to assist the agency monitor and review the work of the development and integration team” can help “insure the success of system development projects.” Again, the Department ignored this provision and allowed IBM to continue with the development of the system without such oversight.

Moreover, given the limited documentation available, we could not determine whether the development of EDRS had active executive management support and sponsorship and whether an experienced project manager was in place to oversee and coordinate the process, which according to Directive 18 are also critical for the success of systems development projects.

By their nature, system development projects are technically and organizationally problematic and prone to a number of risks that can result in runaway costs, extended development periods, and failure to meet needs and objectives, and, in the worst cases, outright failure. We believe that the lack of a formal systems development methodology combined with the absence of independent oversight contributed to the apparent failure of this project.

Department Response: “Directive 18 provides broad recommendations for systems development that are widely accepted as best practices in both government and corporate industries. These include the importance of executive sponsorship, the importance of an experienced technical project manager, and the employment of a systems development methodology. While the initial EDRS effort had both executive management support and a dedicated technical project manager, we are in agreement that the initial project effort did not employ a formal, industry-accepted systems development methodology.

“As evidenced by the current EDRS scope of work, project plan, and project deliverables shared with the Comptroller, DOHMH has implemented a formal methodology that incorporates a well-defined system development life cycle, from requirements and design, through coding, testing and user acceptance. In addition, DOHMH has deployed use case modeling to develop system requirements. These use cases form the basis for design and development, and will be used to develop a test plan that ensures product delivery in accordance with requirements.

“As evidenced by recent audits by the Comptroller of other successful DOHMH systems development efforts, employing this methodology has resulted in the delivery of systems that meet all the requirements defined at the outset of the project.

“DOHMH also believes that engaging an independent quality assurance consultant to review the work of the development and integration team can, depending upon the degree of complexity, level of integration, and time to develop, help insure the success of systems development projects. DOHMH is currently considering the engagement of an independent quality assurance consultant to review this effort, taking into consideration budget and project timeline implications that may result.”

Auditor Comment: We are pleased that the Department has agreed to follow Directive 18 as it pertains to using a system development methodology. However, we feel that the Department’s current efforts to develop EDRS will be greatly strengthened by hiring an independent quality assurance consultant. As stated earlier, we believe that the lack of independent oversight contributed the apparent failure of this project.

**Questionable Information in the
Mayor’s Management Report
Related to EDRS Development**

As stated earlier, according to Department officials EDRS does not exist as a functioning system. However, the information presented to the public in the MMR from 1999 through 2001 gave the impression that the development of the system was progressing. In fact, the Preliminary

Fiscal Year 1999 MMR stated that the Department expected that “system development and implementation will be completed in September 1999”:

“Initial testing of Electronic Death Registration System (EDRS) began in October 1998. System development and implementation will be completed in September 1999. EDRS will allow physicians, hospitals, the Office of Chief Medical Examiner, and funeral directors to file and review death certificates electronically through a secure computer network. The system meets the goals of the Mayor’s Office of Operations customer service initiative by providing faster and more efficient service to its users.”

The Final Fiscal Year 1999 MMR issued in September 1999 reported that “although initial testing of EDRS began later than expected in May 1999, full implementation continues to be on schedule for December 1999.” In addition, the MMR stated that “in August 1999 DOH demonstrated a prototype of the system to funeral directors. Feedback from the demonstration will be incorporated into the system.”

The Final Fiscal Year 2000 MMR issued in September 2000 stated that “the Department is continuing to develop a secure Extranet application, the Electronic Death Registration System (EDRS). . Enhancements to make this pilot system ready for limited roll-out are expected to be completed in early Fiscal 2001, with full implementation of EDRS by June 2002.”

The Preliminary 2001 MMR issued in February 2001 stated, “in the first four months of Fiscal 2001 the Department continued to develop the Electronic Death Registration System A prototype system to help build the pilot program was delivered by a revised date of October 2000. Enhancements to the prototype system are underway and pilot testing is expected to begin in the third quarter of Fiscal 2002, with full implementation beginning in the fourth quarter of Fiscal 2002.”

However, as stated, Department officials informed us that, in reality, EDRS does not exist—despite the statements in the MMR. In addition, the Final Fiscal Year 2001 MMR indicates that a new vendor was hired to develop and implement EDRS without an explanation of what happened to the system that was supposedly developed by IBM. Specifically, the Final Fiscal Year 2001 MMR states that:

“In Fiscal 2001 the Department began work with a new vendor on the Electronic Death Registration System (EDRS). . . . Full implementation of EDRS is expected to begin by a revised date of Fall 2002. As part of this project, in Fall 2001 DOH plans to implement a new system for Vital Records staff to enter death certificates into EDRS.”

The MMR, which is required under the City Charter, is the only Citywide document that sets forth goals, objectives, and outcomes for services provided for the dollars expended. As such, it must be thorough, reliable, and accurate so that the public, as well as City officials, have appropriate information to evaluate City operations. (The Comptroller’s Office completed a full evaluation of the MMR in February 2002. The results of that evaluation are covered in a

separate report entitled, *How Are We Doing? Enhancing Accountability through the Mayor's Management Report.*)

Department Response: “We object strongly to the implication that our MMR information was intentionally misleading.

“The information reported through February 2000 was based on representations made by IBM and the project manager at the time. The agency had implemented an onsite testing area run by IBM for use by VR and other staff. This local testing was one of the ways being used by the project team to define progress, and our projected implementation was based on our testing experience.

“In the Spring of 2000, the agency determined, through further review and testing, that the system was not fully functional and was not designed to meet all the required business needs. Efforts were then made to turn the extensive code base into a useful pilot product.

“The information presented in the Mayors Management Report after that point was presented by the new project team in good faith and was accurate at the time it was written, though it included timelines we did not achieve. DOHMH did not claim in the MMR reports for Fiscal 2000/2001 that the EDRS existed or was operational; we did, however, expect implementation to proceed. Unfortunately, the pilot system that was developed did not meet the business needs of Vital Records, and from a technical perspective; it did not function properly.

“When we abandoned the pilot and started over again in 2001, we reported this in the MMR, pushing back the promised delivery to the fall of 2002. While we thought that this goal was achievable, concerns about the new system's response time delayed the project, as did the World Trade Center disaster. Delays since that time are due to the new focus on national standards for both design and security; these desirable efforts could not have been anticipated.

“We do not accept the criticism that the 2001 MMR indicated that a new vendor was hired ‘without an explanation of what happened to the system that was supposedly developed by IBM.’ This would not have been the appropriate place for such an explanation; a report that we were working with a new vendor was sufficient disclosure.”

Auditor Comment: The Department had every opportunity, in each successive semi-annual publication of the Mayor's Management Report, to restate, correct, and update the public on progress of EDRS development. Specifically, the Department could have provided detailed explanations for project delays, its failure with the initial development effort with IBM, suspension of EDRS work after the project's initial failure, and the selection of a new vendor. We question how the Department can argue that the information in the MMR could not be considered misleading, since the Department has never produced a working

EDRS, contrary to the assertions in the MMR that a deployable system was imminent. We believe that the public has a right to know the important details related to this \$5 million project.

RECOMMENDATIONS

The Department should:

1. Ensure that it follows all applicable PPB Rules in its procurements. In that regard, all large systems development projects should be awarded by competitive sealed proposals and result in a formal contract that is registered with the Comptroller's Office. Such contracts should contain specific deliverables with due dates and related costs as well as penalties for non-performance.

Department Response: "We demonstrated to the auditors during this as well as other EDP audits that for at least two years we have had appropriate procedures for IT procurement, including the development of extensive specifications, competitive procurement, proposal evaluation procedures, and the drafting of contract documents. Now that guidelines have been issued for the submission of NYS OGS contracts to the Comptroller for registration, we are happy to comply with them, and have already done so.

"All of the contracts that we engage in for IT systems development have a liquidated damages clause for non-performance. The NYS OGS contract has rather severe liquidated damages, and in addition there is a 10% withholding of all payments until final delivery. Our contracts office has adopted the liquidated damages clause found in the NYS OGS contracts as the starting point for negotiations with IT vendors on non-OGS contracts."

2. Comply with all applicable provisions of Directive 18 when developing systems. In that regard, the Department should: employ a formal systems development methodology; engage an independent quality assurance consultant; ensure that executive management support and sponsorship and an experienced project manager are in place to oversee and coordinate the development process.

Department Response: "The current EDRS effort has full executive management support. DOHMH has hired an experienced technical project manager to oversee the current EDRS effort. DOHMH has already shared with the Comptroller evidence of the formal systems development methodology currently being used on the project. DOHMH is considering the use of an independent quality assurance consultant to review development efforts."

Auditor Comment: We are pleased that the Department has agreed to follow Directive 18 as it pertains to using a system development methodology. However, as stated earlier, the Department's current efforts would be greatly

enhanced by hiring an independent quality assurance consultant to help ensure that the project is completed according to the Department's expectations.

3. Ensure that it provides accurate information to the Mayor's Office of Operations for inclusion in the MMR.

Department Response: "We agree."

THE CITY OF NEW YORK
DEPARTMENT OF HEALTH AND MENTAL HYGIENE
OFFICE OF THE COMMISSIONER



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April 25, 2003

Greg Brooks
Deputy Comptroller for Policy, Audits, Accountancy & Contracts
The City of New York Office of the Comptroller
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1 Centre Street, Room 530 South
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Dear Mr. Brooks:

The Department of Health and Mental Hygiene (DOHMH) is responding to the draft audit report on the Development and Implementation of the Electronic Death Registration System (EDRS).

We acknowledge that there were a number of problems in the original DOHMH effort to implement an electronic death registration system. Some of the comments made in this report about this effort are justified, though others are overstated.

The report fails to acknowledge that the Department has made major changes in every significant area of this project: new organizational responsibility, new project management, new procurement procedures, and new methods of collaboration between the program area and the technical staff. These changes, which pre-date the audit, are fully consistent with the standards suggested in the audit. We provided full documentation to the auditors concerning our current efforts, and we strongly urge you to include this information so that your findings more accurately reflect the Department's work on the EDRS project.

The report also fails to acknowledge that the EDRS initiative was, and continues to be, a cutting-edge activity. A fully functioning EDRS does not exist in any state or jurisdiction. Although many states have attempted to design and implement EDR systems, none has a registration system that meets national standards, satisfies the multiple needs such a system must serve, and provides sufficient security to meet New York City's needs. To be an accurate assessment of the project, this recognition is essential.

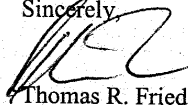
New York City was selected in September 2002 to lead the effort to develop the national model for EDRS specifications and requirements. The City adopted the unique approach of working with five other jurisdictions, the National Center for Health Statistics (NCHS), the Social Security Administration (SSA) and the National Association for Public Health Statistics and Information Systems (NAPHSIS). The model that is being developed will benefit from the experience of other jurisdictions and will result in a best practices design. The national model for EDR systems will be freely shared with all interested jurisdictions and vendors and should ultimately speed implementation of EDR systems nationwide. It is likely that future Federal funding for EDR development will require the adoption of this model in development efforts.

We are proud of our current position in the forefront of national design efforts for death registration systems, and while our original project had to be terminated, we learned a great deal from the effort.

Attached is a more detailed response to the findings and the recommendations.

We appreciate the courtesy and professionalism of your audit staff in the performance of this audit. If you have any questions or need further information, please contact Charles Troob, Assistant Commissioner, Business Systems Improvement at (212) 788- 4757.

Sincerely,



Thomas R. Frieden, M.D., M.P.H.
Commissioner

cc: Vince Liquori, Assistant Director for Support Services

TRF/ct

DETAILED REPOSE TO DRAFT AUDIT REPORT ON THE DEVELOPMENT AND
IMPLEMENTATION OF THE ELECTRONIC DEATH REGISTRATION SYSTEM BY THE
DEPARTMENT OF HEALTH AND MENTAL HYGIENE
7A03-073

This audit report covers work done beginning in 1998 on the Electronic Death Registration System (EDRS) initiative. It focuses almost exclusively on work done by IBM through 2001. The IBM initiative was terminated by the Department, and substantial correspondence has already been exchanged with the Office of the Comptroller concerning this initiative.

Since 2001 the Department has assigned new staff to the initiative, placed it in a different organizational unit, and worked with a new vendor acquired through new and much more thorough procurement procedures. Even more significant, the complexity and challenge of this initiative have been nationally recognized, and DOHMH has been given a national role in leading the development effort.

The background section of this audit report does not reflect the full history of the project, except to indicate that "as of 2003, EDRS is still not developed, and the Department has engaged another firm, Dynamic Services International (DSI) to develop the system at an additional cost of \$1.8 million." Nor do the report recommendations reflect the information given to the auditors which indicate that the procurement and management procedures in place since 2001 conform in all material respects to the PPB rules and Comptroller's Directive cited in the report.

Following are comments on specific sections of the document and our response to the recommendations.

Background

We suggest that the background section of this audit be revised to include the following information.

EDR Systems are very complex. A fully functioning Electronic Death Registration System does not exist in any state or jurisdiction. Although many states have attempted to design and implement EDR systems, none has a registration system that meets national standards, satisfies the multiple needs such a system must serve, and provides sufficient security to meet New York City's needs.

The work of DOHMH on EDRS was interrupted by 9/11, and it had to be put on hold until the Spring of 2002. When we resumed work on this project we learned that many other jurisdictions, including some working with our vendor, were trying unsuccessfully to implement EDRS. It then became evident that a national collaborative effort was needed.

The National Center for Health Statistics (NCHS), the Social Security Administration (SSA) and the National Association for Public Health Statistics and Information Systems (NAPHSIS) formed a national vital records Re-engineering Oversight Committee to speed the reliable

development and implementation of electronic birth and death registration systems. The first phase is developing national model requirement specifications.

New York City was selected in September 2002 to lead the effort to develop the national model for EDRS specifications and requirements. The City adopted the unique approach of working with five other jurisdictions, the National Center for Health Statistics (NCHS), the Social Security Administration (SSA) and the National Association for Public Health Statistics and Information Systems (NAPHSIS). The model that is being developed will benefit from the experience of other jurisdictions and will result in a best practices design. The national model for EDR systems will be freely shared with all interested jurisdictions and vendors and should ultimately speed implementation of EDR systems nationwide. It is likely that future Federal funding for EDR development will require the adoption of this model in development efforts.

The requirements phase of this project is funded largely by SSA, which provided \$500,000 in October 2002 to the City for this project. The EDRS National Team is developing system requirements. New York City has engaged Northrop Grumman Mission Systems, a firm with extensive experience working with the U.S. Centers for Disease Control and Prevention on use-case modeling. Northrop Grumman has conducted a series of workshops, the goal of which is to construct a core set of unambiguous requirements that have national applicability, and an additional set of New York City-specific extensions that will meet New York City's local needs.

The results of this effort will be presented in a national meeting in New York City of all jurisdictions in June 2003. The City will then use this national model and its New York City extensions, to develop its EDR system. We will be using a vendor that has already been selected through the NYS OGS contract process.

Inappropriate Procurement Practices

This section of the audit discusses the procurement in 1998 for services from IBM. It should also discuss the procurement which led to the selection of DSI. This would provide a more current description of DOHMH technology procurement procedures.

As mentioned in the audit, the preferred method for identifying computer systems consultants is to prepare system specifications and business requirements that are included in a Request for Proposals, to solicit vendors. However, at the time that IBM was retained by the agency in August of 1999, the agency was not in a position to specify in detail sufficient for an RFP the needs and scope of the project. The agency therefore was not in a position to prepare a contract with specific deliverables, due dates, related costs, and penalties for non-performance. The arrangement with IBM, therefore, was based on billable hours.

IBM was retained to assist DOH in preparing a needs assessment; i.e., defining and documenting the business processes, work rules, and system requirements of the death registry system. IBM therefore created a system design and prototype application based upon the needs assessment. This work was used by DOH in developing the project definition for the new solicitation to implement the EDR system.

The Comptroller is correct in noting that the agreement with IBM was not presented for registration. This was neither a requirement nor standard procedure. The Department had been following the procedure set down by DCAS for purchases off State OGS contracts; that is, present the Purchase Order to DCAS for processing. The Comptroller knew that procurements from State contracts were not required to be submitted for registration, although some agencies did so.

A new process has since been agreed to in conversations between MOC, the Law Department and the Comptroller. An "Interim Process for Intergovernmental Procurement Transactions," promulgated in a memorandum from MOC dated September 5, 2002, now calls for Comptroller registration.

Market research was conducted by the Department at the time that the Purchase Orders were set up. The program responsible for this procurement at the time researched eight computer consultant firms in the State OGS list. IBM's prices for hourly services for the required systems analysts were the lowest of the eight surveyed. Based on this survey the ACCO determined, and DCAS accepted, that appropriate market research had been conducted.

The Department did not ignore the City's normal procurement practices; rather the Department followed the procedures established at the time. In addition, given the unknowns surrounding the needs assessment of EDRS in 1999, the Department at that time determined that a fully specified RFP was not appropriate at such an early stage in the development of its EDR system.

Failure to Follow Directive 18

Directive 18 provides broad recommendations for systems development that are widely accepted as best practices in both government and corporate industries. These include the importance of executive sponsorship, the importance of an experienced technical project manager, and the employment of a systems development methodology. While the initial EDRS effort had both executive management support and a dedicated technical project manager, we are in agreement that the initial project effort did not employ a formal, industry-accepted systems development methodology.

As evidenced by the current EDRS scope of work, project plan, and project deliverables shared with the Comptroller, DOHMH has implemented a formal methodology that incorporates a well-defined system development life cycle, from requirements and design, through coding,

testing and user acceptance. In addition, DOHMH has deployed use case modeling to develop system requirements. These use cases form the basis for design and development, and will be used to develop a test plan that ensures product delivery in accordance with requirements.

As evidenced by recent audits by the Comptroller of other successful DOHMH systems development efforts, employing this methodology has resulted in the delivery of systems that meet all of the requirements defined at the outset of the project.

DOHMH also believes that engaging an independent quality assurance consultant to review the work of the development and integration team can, depending upon the degree of complexity, level of integration, and time to develop, help insure the success of systems development projects. DOHMH is currently considering the engagement of an independent quality assurance consultant to review this effort, taking into consideration budget and project timeline implications that may result.

Questionable Information in the Mayor's Management Report Related to EDRS Development

We object strongly to the implication that our MMR information was intentionally misleading.

The information reported through February 2000 was based on representations made by IBM and the project manager at the time. The agency had implemented an onsite testing area run by IBM for use by VR and other staff. This local testing was one of the ways being used by the project team to define progress, and our projected implementation was based on our testing experience.

In the Spring of 2000, the agency determined, through further review and testing, that the system was not fully functional and was not designed to meet all the required business needs. Efforts were then made to turn the extensive code base into a useful pilot product.

The information presented in the Mayor's Management Report after that point was presented by the new project team in good faith and was accurate at the time it was written, though it included timelines we did not achieve. DOHMH did not claim in the MMR reports for Fiscal 2000/2001 that the EDRS existed or was operational; we did, however, expect implementation to proceed. Unfortunately, the pilot system that was developed did not meet the business needs of Vital Records, and from a technical perspective, it did not function properly.

When we abandoned the pilot and started over again in 2001, we reported this in the MMR, pushing back the promised delivery to the fall of 2002. While we thought that this goal was achievable, concerns about the new system's response time delayed the project, as did the World Trade Center disaster. Delays since that time are due to the new focus on national standards for both design and security; these desirable efforts could not have been anticipated.

We do not accept the criticism that the 2001 MMR indicated that a new vendor was hired 'without an explanation of what happened to the system that was supposedly developed by IBM.' This would not have been the appropriate place for such an explanation; a report that we were working with a new vendor was sufficient disclosure.

Recommendations

The Department should:

1. Ensure that it follows all applicable PPB rules in its procurements. In that regard, all a large systems development projects should be awarded by competitive sealed proposals and result in a formal contract that is registered with the Comptroller's Office. Such contracts should contain specific deliverables with due dates and related costs as well as penalties for non-performance.

Response: We demonstrated to the auditors during this as well as other EDP audits that for at least two years we have had appropriate procedures for IT procurement, including the development of extensive specifications, competitive procurement, proposal evaluation procedures, and the drafting of contract documents. Now that guidelines have been issued for the submission of NYS OGS contracts to the Comptroller for registration, we are happy to comply with them, and have already done so.

All of the contracts that we engage in for IT systems development have a liquidated damages clause for non-performance. The NYS OGS contract has rather severe liquidated damages, and in addition there is a 10% withholding of all payments until final delivery. Our contracts office has adopted the liquidated damages clause found in the NYSOGS contracts as the starting point for negotiations with IT vendors on non-OGS contracts.

2. Comply with all applicable provisions of Directive 18 when developing systems. In that regard, the Department should: employ a formal systems development methodology; engage an independent quality assurance consultant; ensure that executive management support and sponsorship and an experienced project manager are in place to oversee and coordinate the development process.

Response: The current EDRS effort has full executive management support. DOHMH has hired an experienced technical project manager to oversee the current EDRS effort. DOHMH has already shared with the Comptroller evidence of the formal systems development methodology currently being used on the project. DOHMH is considering the use of an independent quality assurance consultant to review development efforts.

3. Ensure that it provides accurate information to the Mayor's Office of Operations for inclusion in the MMR.

Response: We agree.