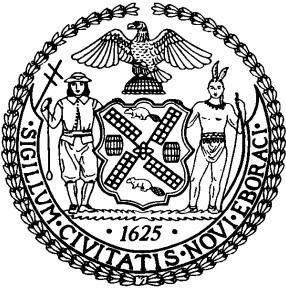


AUDIT REPORT



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

Audit Report on the Building Information System of the Department of Buildings

7A04-101

September 27, 2004



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 of the Building Information System at the Department of Buildings.

The results of our audit, which are presented in this report, have been discussed with Department of Buildings officials, and their comments have been considered in the preparation this report.

Audits such as this provide a means of ensuring that City agency computer systems function reliably, are accurate, are secure from unauthorized access, and are effective tools for supporting the agencies' missions.

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

Very truly yours,

A handwritten signature in cursive script that reads "William C. Thompson, Jr.".

William C. Thompson, Jr.

WCT/gr

Report: 7A04-101
Filed: September 27, 2004

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

**Audit Report on the
Building Information System of the
Department of Buildings**

7A04-101

AUDIT REPORT IN BRIEF

We performed an audit on the Building Information System (BIS) at the Department of Buildings (Department) to evaluate whether BIS is an effective tool, functions reliably, and supports the Department's mission. Implemented in the mid-1980s, BIS is a mainframe computer database application containing information on properties, complaints, and violations within the City. In August 2001, the Department updated BIS by establishing an Internet-based application (BIS on the Web) to provide the general public and members of the construction industry with access to building, complaint, and license information.

Audit Findings and Conclusions

BIS is secure from unauthorized access, functions reliably, and is an effective tool that allows Department users to record and track building code violations, permit registrations and approvals, complaints, licensing, and inspections; and BIS supports the Department's mission of ensuring the safe and lawful use of more than 900,000 buildings and properties in the City. In addition, the system allows public users to access data easily through BIS on the Web. We did find, however, that the Department does not have adequate application software controls in place to ensure that information (from other City agencies) downloaded into the BIS Property database is accurate and reliable.

Audit Recommendations

To address these issues, we recommend that the Department:

- Establish application software controls that ensure that all information entered in BIS is accurate.
- Establish policies and procedures with data-originating agencies to reduce the overall missing-data problem attributable to those agencies to a more acceptable rate of less than one percent of total records.

INTRODUCTION

Background

The Department of Buildings (Department) ensures the safe and lawful use of more than 900,000 buildings and properties by enforcing the Building Code, Zoning Resolution, State Multiple Dwelling Law, Electrical Code, and other energy, labor, and local laws related to building construction and alterations in the City. In doing so, it annually reviews approximately 57,000 construction plans, issues approximately 87,000 new and renewal permits, and performs approximately 350,000 inspections. In addition, it licenses nine trades with 27 classifications. These include construction-related trades for such workers as plumbers, electricians, welders, boiler operators, riggers, elevator inspectors, fire suppression piping contractors, sign hangers, and hoisting machine operators.

During the mid-1980s, the Department developed and implemented its Building Information System (BIS) as a mainframe computer database application containing information on properties, complaints, and violations within the City. BIS is physically located at the Department of Information Technology and Telecommunications (DoITT), which provides database-administration support, system backup, and recovery. The Department is responsible for system security, programming, maintenance, and enhancements. BIS supports the Department's mission by recording and tracking building code violations, registration and approval of permit applications, complaints, licensing, and inspections. BIS also produces management reports for various Department work units.

The BIS database serves as a depository of information created within the Department, as well as for data imported from other City agencies, such as tax-based information from the Department of Finance and geographically-based information from the Department of City Planning.

Department users generally access BIS through its Local and Wide Area Networks (LAN/WAN). The agency's LAN/WAN connects its authorized users in the five boroughs to BIS and to more than 60 other City agency applications.¹

¹ See Appendix I for BIS features available to authorized agency users, and Appendix III for a listing of major external agency users

In August 2001, the Department updated BIS by establishing an Internet-based application (“BIS on the Web”) to provide the general public and members of the construction industry with access to buildings, complaint, and license information. The Department owns BIS on the Web and the BIS mainframe application. The Internet functionality of BIS increased the Department’s operational capability by enhancing the services it delivers to users within the Department as well as to the general public. Before the Department established the Internet capability, the general public and members of the construction industry were able to gain access to information stored and processed in BIS only through terminals at various agency premises, or by paid subscription. The Department recently reported that access to BIS through the Internet is now recorded at the rate of 94,000 page-views per day, up from 9,000 when this capability was first developed. See Appendix II for BIS features available to the general public through BIS on the Web.

Objectives

Our objectives were to evaluate whether:

- BIS is an effective tool that allows users to record and track building code violations, permit application registrations and approvals, complaints, licensing, and inspections; and, in this regard, whether BIS functions reliably, whether information recorded on the BIS database is accurate, and whether BIS is secure from unauthorized access; and
- BIS is an effective tool for supporting the Department’s mission.

Scope and Methodology

The audit covered the period from November 2003 through February 2004. As a criterion for this audit, we used Comptroller’s Internal Control and Accountability Directive 18, *Guidelines for the Management, Protection and Control of Agency Information and Information Processing Systems*.

To achieve our audit objectives we:

- Reviewed Department organization charts and personnel listings to identify agency management and staff support of BIS;
- Interviewed agency personnel to obtain an understanding of BIS functions and operations;
- Reviewed the Fiscal Years 2003 and 2004 Mayor’s Management Reports and accessed the Department’s Web site for information on the Department and BIS.

- Reviewed the Department’s latest Directive 1 filing.
- Observed Department personnel as they accessed and used BIS to gain an understanding of user needs and how BIS is used to perform daily their operations;
- Obtained full-inquiry access to BIS to test the functionality of the system through a direct mainframe connection and to simulate a Department employee’s experience with BIS;
- Accessed BIS on the Web through the Internet to simulate the experience of a public user or a trade user with BIS and to identify the information available;
- Examined 59 of the 214 randomly selected data fields found in the Property file, received in January 2004, to ensure that the information recorded in these fields complied with the required attributes designated by the system specifications;²
- Extracted seven key data elements from each record in the Property database for data-integrity testing.³ The data elements included the Building Identification Number (BIN), the specific number assigned by the Department of City Planning to each building in New York City. These data elements also included block, lot, and address information recorded for each building. These selected elements are considered important because every building-related transaction within BIS relies on the accuracy of these key data elements. The data-integrity tests included evaluating data relationships, identifying record gaps, assessing completeness of information, and determining overall reliability of the data. The accuracy of BIN and associated data elements is crucial to successful deployment of new technology applications;
- Examined and analyzed documentation—specifically, a security matrix that defines and specifies user-access capabilities for 99 user groups—to evaluate the adequacy of the assignment of user-access rights to BIS;
- Reviewed and analyzed BIS documentation related to system specifications, policies, procedures, file structures, and data-sharing arrangements; and
- Reviewed and analyzed 59 batch-reports used by management in seven Department work units to evaluate output controls. Data output controls are part of application software controls, which help ensure the integrity of the system’s output. The frequency of these reports ranges from daily (e.g., violations hearing-date calendar, construction complaints, customer statistics, and pre-filed jobs), weekly, monthly, or as needed.⁴

The system controls at other City agencies that also provide data to BIS were not the focus of this audit. However, we examined and analyzed procedures at DoITT with regard to

² See Appendix IV for a listing of 53 of the 59 fields examined.

³ Six additional fields plus one of the 53 fields listed in Appendix IV.

⁴ See Appendix V for a list of the reports available from BIS.

BIS security and reviewed and analyzed programming change-control procedures to ensure that only authorized changes are made to BIS.

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 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 June 3, 2004. On June 8, 2004, we submitted a draft report to Department officials with a request for comments. We received a written response from Department officials on June 22, 2004. In its response, the Department stated that it “was pleased that the . . . audit found that the Building Information System (BIS) functions reliably, is secure from unauthorized access and is an effective tool for recording and monitoring violation, permit, complaint, inspection and licensing activity.” However, the Department disagreed with two recommendations.” The Department’s specific comments and our rebuttals are contained in the Recommendation section of this report.

The full text of the Department response is included as an addendum to this final report.

FINDINGS

BIS is secure from unauthorized access, functions reliably, and is an effective tool that allows Department users to record and track building code violations, permit registrations and approvals, complaints, licensing, and inspections; and BIS supports the Department’s mission of ensuring the safe and lawful use of more than 900,000 buildings and properties in the City. In addition, the system allows public users to access data easily through BIS on the Web. We did find, however, that the Department does not have adequate application software controls in place to ensure that information downloaded into the BIS Property database is accurate and reliable.

Application Software Controls

The data integrity tests found more than 11.5 percent of the property records in BIS were incomplete or incorrect. Specifically, 99,919 (10.675 percent) of the 936,030 records in the Property database in January 2004 had incorrect or missing Zip Code data. In addition, 8,035 records (.858 percent) had incorrect or missing Tax-Block and/or Tax-Lot data fields. The existence of incorrect Tax-Block and Tax-Lot information in the BIS database resulted from problems with data transmitted from the Department of Finance. Had the Department implemented edit controls on BIS, this inaccurate data would have been identified, discussed with the Department of Finance, and corrected on BIS.

Since much of the data in BIS originates from databases maintained by other City agencies, it is important for the Department to institute adequate application software controls that ensure the quality and reliability of data imported into BIS.

Comptroller's Directive 18, §8.2, states:

“Application software controls are automated controls built into application programs. They ensure that every transaction entering the information processing environment is authorized, recorded and processed completely and accurately, protected from physical loss, theft or unauthorized manipulation and that the data file integrity is preserved. Agencies must insure that adequate application controls are in place to eliminate the input, processing and output risks

“There are a variety of application controls: (1) Data origination controls are designed to ensure that data is accurate, complete and timely when it is entered into the processing system. These controls insure that data stems from approved sources, is properly authorized that input errors are properly handled and that documents are retained if necessary. (2) Input controls are designed to ensure accuracy, completeness and timeliness of the data when it is converted to the electronic format readable by the agency's information processing systems. Input controls cover data entry, data conversion, data validation, editing, and error handling.”

We notified Department management of the results of our record examination. We noted in the Department's Directive 1 filing and confirmed that the Department has an ongoing low-priority project that is attempting to correct the BIS data integrity problem by cleaning up records lacking BINs and geographic data. In March 2004, we reexamined the records in which we found errors during our January 2004 search of the Property database. We found that the Department had made progress in correcting the problem of the missing data for certain records. The Department reduced the number of missing Zip Codes to approximately three percent of the 936,030 records in the Property database. However, it only minimally corrected the problem of missing Tax-Block and/or Tax-Lot records.

RECOMMENDATIONS

We recommend that the Department:

1. Establish application software controls that ensure that all information entered in BIS is accurate.

Department Response: “The Buildings Department agrees with the intent of this recommendation, but disagrees with its substance. The findings that it was based upon are unsound. The findings are erroneous in the following ways:

“a. As explained in the exit conference, the zip code data referred to is merely vestigial, in that it is never used, and in fact, is not even displayed on any BIS screen. This zip code information was uploaded to BIS when the system was first developed eighteen years ago. The fact that the zip code data in the BIS Property file is missing does not pose any data integrity or other problems, because there is valid zip code data displayed via BIS. The valid zip code data upon which the public relies (via BIS-on-the-Web) is derived from the Department of City Planning’s Geosupport system. The zip code relating to an owner’s mailing address is derived from the Department of Finance.

“b. The absent block and lot information in the BIS database did not result from problems with data transmitted from the Department of Finance (‘DOF’). In fact, new property records are generated in BIS without any electronic data transmission from DOF. Rather, new property records are generated in BIS when an applicant brings an RP604 (a DOF form) showing tentative lot numbers assigned by DOF to the Buildings Department upon filing a Subdivision or New Building application. For all pre-existing blocks and lots, the data was obtained from, or is validated against, the Department of City Planning’s Geosupport system.

“We reviewed the 8,035 records which contain zeros or blanks in the block and lot fields and found that they fall into four general categories:

“(i) New buildings or properties in progress (properties not yet recognized by the Department of City Planning)-for new buildings in progress, the Buildings Department creates a ‘dummy’ or temporary Building Identification Number (‘BIN’). These ‘dummy’ BINs allow the public to file applications with the Buildings Department for properties that have only tentative lot numbers and unvalidated addresses (the new address provided by the Borough President may not appear in Geosupport.) Ultimately, when the final lot numbers are provided by DOF to the Department of City Planning, and the address is validated, the Buildings Department will update its records to replace the dummy BIN with a valid BIN. At that point, all the valid geographic references that exist in Geosupport (including block and lot) will be picked up and displayed in BIS.

“(ii) New buildings or properties in progress (properties have been created in Geosupport, but they were not in the last release.)-Geosupport updates are released on a quarterly basis. If DOF and the Buildings Department do not provide DCP with final lot numbers and requests for valid BINs within a certain window, Geosupport will not reflect these geographic references for another cycle. The Buildings Department, as well as other agencies, run Geosynchronization programs in order to pick up these changes.

“(iii) Address was entered by complaint prior to 1995—Prior to 1995 the Buildings Department would create an address in BIS, without a block and

lot, in order to allow a complaint to be filed against that address. That policy is no longer in effect.

“(iv) Address is a pre-BIS placeholder. These addresses were also assigned ‘dummy’ BINs and were put into the BIS system in order to load data about pre-BIS job filings (including demolitions) that took place on these sites.

“c. The Comptroller used a BIS flat file data set to do its analysis in January. In March, instead of requesting another flat file, according to what was stated at the exit conference, it checked the records in question via BIS-on-the-Web. As stated in section ‘a’, above, the Buildings Department does not display the zip code data in the Property file on any BIS screen. The zip code data that the Comptroller found in March via BIS-on-the-Web was coming from a live link to Geosupport. The fact that block and lot records were not updated is due to the reasons articulated in section ‘b’, above. While the Department does do manual research to correct records, systematically replaces ‘dummy’ BINs with valid BINs, and regularly runs Geosynchronization programs, in this case, the ‘work’ was merely pre-existing programming done in order to create BIS-on-the-Web.”

Auditor Comment: The Department first states that it disagrees with the recommendation then goes on to state that it agrees with the intent of the recommendation. However, the Department does not indicate whether it will or will not implement the recommendation. While the Department is correct in that in March we checked the zip code data through BIS, it fails to explain why it accepts a three percent error in Geosupport, since it contends that “the fact that the zip code data in the BIS Property file is missing does not pose any data integrity or other problems, because there is valid zip code data displayed via BIS.” We are mystified that the Department continues to devote space on its database to store 18-year-old “vestigial” data instead of ensuring the accuracy and usefulness of all data it maintains. Moreover, since the BIS database serves as a depository of information created within the Department as well as of data imported from other City agencies, we believe that the information in each database should match. In any case, we reiterate the importance of software controls to ensure that all information entered in BIS is accurate. Since the use of BIS through the Internet is now recorded at the rate of 94,000 page-views per day, the Department should make every effort to ensure the accuracy of all system data.

2. Establish policies and procedures with data-originating agencies to reduce the overall missing-data problem attributable to those agencies to a more acceptable rate of less than one percent of total records.

Department Response: “The Buildings Department agrees with the spirit of this recommendation, but disagrees with its substance, as it is based upon a misunderstanding of how the Buildings Department obtains data originating from other agencies.

“There is no need to establish new policies and procedures with data-originating agencies because, as discussed above, the data is not missing; there is just a time lag due to manual

processes and due to the update cycle of Geosupport. . . . The Department of Buildings meets regularly with the Departments of Finance and City Planning in order to improve and refine the ways in which we share data, particularly geographic data. The Department of Information Technology and Telecommunications is assisting us in this effort. Furthermore, technological innovations such as BIS-on-the-Web and DOF's ACRIIS [Automated City Register Information System] have enabled us to leverage the Department of City Planning's Geosupport system to better serve the public."

Auditor Comment: We are pleased that the Department is working with data-originating agencies to refine the ways in which data is shared. However, we question the Department's disagreement with our recommendation to formalize this process. Written procedures provide additional controls by ensuring that employees understand their responsibilities and that staff turnover and organizational changes do not hinder the Department's ability to ensure the integrity of the data.

Main Menu Features of BIS via Mainframe Connection

- Index System
- Application Processing / Plan Examination / C of O
- Inspections
- Bureau of Electrical Control
- Elevator Inspection System
- ECB Violation Queries
- Local Law Compliance
- Local Law 16 of 84 (Fire Safety)
- Local Law 10 of 81 (Elevators)
- General Information Query
- Complaint System
- Accounting
- Plumbing Inspection System
- Multi-Agency Composite Property & Owner Information Query
- Licensing System
- Boiler System
- Illuminated Signs
- Facade (LL11/98)

Features of BIS on the Web

BIS Web application features for building information search

Method	Search by Property
1	Select a Borough ; enter House Number and Street.
2	Select a Borough ; enter Block and Lot.
3	Enter Building Identification Number (BIN).

Borough choices = Manhattan, Bronx, Brooklyn, Queens, Staten Island

Method	Search for Complaint or Violation
1	Enter Complaint Number.
2	Enter ECB Violation Number.
3	Enter BIN Number for ECB Violation.
4	Select ECB Violation Type ; enter Start Month, Start Day, and Start Year; and enter End Month, End Day, and End Year.

Violation Type choices

AD – Administrative
 BL – Boiler
 CD – Cranes-Derrick
 CN – Construction
 EL – Elevator
 HP – HPD
 LL – Local Law
 PA – Place Assembly
 PB – Plumbing
 PD – Physical Disab
 QL – Quality of Life
 SG – Signs
 SS – Site Safety
 ZN – Zoning

Method	Applications Searches
1	Enter BIS Job Number and Doc Number.
2	Enter Permit Number.
3	Enter Plumbing Work Order Number.
4	Enter ‘Work Orders by Licensee’ License Type , and License Number
5	Enter C. of O. Application Number, and Seq. Number.
6	Enter C. of O. Work Order Number.
7	Enter BEC Application Number.
8	Select Job Type and Community Board ; enter Start Month, Start Day, and Start Year; and enter End Month, End Day, and End Year.
9	Enter ‘BIS Jobs’ License Type and License Number.
10	Enter ‘ARA Jobs’ License Type and License Number.

'Work Orders by Licensee' License Type choices
Fire Suppression Contractor
Master Plumber

JOB Type choices
A1 – Alteration Type 1
A2 – Alteration Type 2
A3 – Alteration Type 3
DM – Demolition
NB – New Building
PA – Public Assembly
PR-ARA – ALT/Repair
SC – Subdivision-Condo
SG – Sign
SI – Subdivision-Improved
SU – Subdivision-Unimproved

Community Board choices				
Manh. – ALL	Bronx –	Brooklyn –	Queens –	Staten Is. –
Manhattan – 01	ALL	ALL	ALL	ALL
Manhattan – 02	Bronx – 01	Brooklyn – 01	Queens – 01	Staten Is. – 01
Manhattan – 03	Bronx – 02	Brooklyn – 02	Queens – 02	Staten Is. – 02
Manhattan – 04	Bronx – 03	Brooklyn – 03	Queens – 03	Staten Is. – 03
Manhattan – 05	Bronx – 04	Brooklyn – 04	Queens – 04	
Manhattan – 06	Bronx – 05	Brooklyn – 05	Queens – 05	
Manhattan – 07	Bronx – 06	Brooklyn – 06	Queens – 06	
Manhattan – 08	Bronx – 07	Brooklyn – 07	Queens – 07	
Manhattan – 09	Bronx – 08	Brooklyn – 08	Queens – 08	
Manhattan – 10	Bronx – 09	Brooklyn – 09	Queens – 09	
Manhattan – 11	Bronx – 10	Brooklyn – 10	Queens – 10	
Manhattan – 12	Bronx – 11	Brooklyn – 11	Queens – 11	
	Bronx – 12	Brooklyn – 12	Queens – 12	
		Brooklyn – 13	Queens – 13	
		Brooklyn – 14	Queens – 14	
		Brooklyn – 15		
		Brooklyn – 16		
		Brooklyn – 17		
		Brooklyn – 18		

'BIS Jobs' License Type choices
Professional Engineer
Registered Architect

'ARA Jobs' License Type choices
Fire Suppression Contractor
Oil Burner Installer
Master Plumber

Method	Boiler Search
1	Select a Borough and enter Boiler Number.

Borough choices = Manhattan, Bronx, Brooklyn, Queens, Staten Island

Method	Gas Service Authorization
1	Select a Borough ; enter Start Month, Start Day, and Start Year; and enter End Month, End Day, and End Year.

Borough choices = Manhattan, Bronx, Brooklyn, Queens, Staten Island

Method	Power Authorization Issued
1	Select a Borough ; enter Start Month, Start Day, and Start Year; and enter End Month, End Day, and End Year.

Borough choices = ALL Boroughs, Manhattan, Bronx, Brooklyn, Queens, Staten Island

Method	Elevator Device Search
1	Enter Device Number.

Method	Skilled Trades Licenses Search
1	Enter Licensee Last Name, and select a License Type .
2	Enter Business Name, and select a License Type .
3	Enter License Number, and select a License Type .

License Type Choices	
Electrical Contractor	
Electrical Firm	
Concrete/Cement Tester	
Stationary/Portable Engineer	
Fire Suppression Contractor	
Hoist Machine Operator	
Elevator Agency	
Site Safety Manager	
Oil Burner Installer	
Master Plumber	
Rigger	
Sign Hanger	
Tower Crane Operator	
Low Voltage License	
Welder	

Major External BIS Users and Their BIS Use

Agency/Entity	BIS Use
Building Industry Professionals	Interactive Voice Response System – Standard telephone access to BIS for inspection scheduling and requesting general information to be sent to inquirer via FAX. DOB provides desktop computer software to implement PC Filing of building work plans by professional users—PC Filing creates a data diskette for DOB to upload to BIS.
City Planning, Department of (DCP)	Extracts property and demolition information, building alteration information, and Certificate of Occupancy information from BIS. DCP provides BIS with GeoSupport data.*
Environmental Control Board (ECB)	Transfers ECB violations to BIS.
Finance, Department of (DOF)	Data interchange: DOF receives BIS data on substantive changes to a property, for tax reassessment purposes. BIS receives DOF data on block and lot (Tax-Block and Tax-Lot) for new properties, information on lot sub-divisions, property ownership, and building attributes such as number of stories.
Fire Department	Query BIS data.
Housing Preservation & Development, Department of	Query BIS data.
Landmarks Preservation Commission	Enters data into BIS.
Loft Board	Enters data into BIS.
Public Utilities (Con Edison & KeySpan)	Track plumbing approvals, building demolition schedules for meter installation/removal work scheduling.

* GeoSupport is a mainframe system developed and supported by the Department of City Planning to supply client applications (such as BIS) with text-based geographical and political attributes for given addresses, intersections, points, etc.

Appendix IV

DOB-BIS-PROPERTY File Examination for the associated attributes:

Field	Description	Attributes
01.	P-BIN	numeric data only
02.	P-NUMBER-OF-STORIES	numeric data only
03.	P-TOT-STORIES	numeric data only
04.	P-HEIGHT-OF-BUILDING	numeric data only
05.	P-BIN-REFERENCE-NUMBER	numeric data only
06.	P-VERIFY-TYPE	blank, Y or N
07.	P-BOILER-FLAG	limited alphanumeric usage
08.	P-LOFT-FLAG	limited alphanumeric usage
09.	P-SIGN-FLAG	limited alphanumeric usage
10.	P-WATERFRONT-FLAG	limited alphanumeric usage
11.	P-ADULT-USE-FLAG	limited alphanumeric usage
12.	P-LLAW-FACADE	limited alphanumeric usage
13.	P-FLOOD-ZONE	limited alphanumeric usage
14.	P-VACANT-LOT	limited alphanumeric usage
15.	P-TA	limited alphanumeric usage
16.	P-UB	limited alphanumeric usage
17.	P-SRO	limited alphanumeric usage
18.	P-SPECIAL-STATUS-DATE	date or blanks
19.	P-DEMO-DATE	date or blanks
20.	P-LNO-DATE	date or blanks
21.	P-ELEC-SPECIAL-STATUS-DATE	date or blanks
22.	P-FIN-UPDATE-DATE	date or blanks
23.	P-FIN-STORIES	numeric data only
24.	P-TOT-FIN-STORIES	numeric data only
25.	P-FIN-ASSESSED-VALUE	numeric data only
26.	P-FIN-SINGLE-ROOM-FLAG	limited alphanumeric usage
27.	P-FIN-EXTENSION	blank, E, G or EG
28.	P-FIN-IRREGULAR-SHAPE	limited alphanumeric usage
29.	P-FIN-UPD-DATE	date or blanks
30.	P-FIN2-OWN-UPD-DATE	date or blanks
31.	P-FIN-OWNER-CODE	numeric data only
32.	P-FIN-CITY-OWNED-FLAG	limited alphanumeric usage
33.	P-FIN-MAST-CREATE-DATE	date only
34.	P-FIN-MAST-LAST-UPDATE	date or blanks
35.	P-FIN-MAST-CITY-OWNED-FLAG	limited alphanumeric usage
36.	P-FINAVM-UPD-DATE	date or blanks
37.	P-FIN-TRANS-LAND-VALUE	numeric data only
38.	P-FIN-TRANS-TOT-VALUE	numeric data only
39.	P-FIN-CURRENT-ACT-VALUE	numeric data only
40.	P-FIN-CURRENT-TOTL-VALUE	numeric data only
41.	P-LANDMARK-STATUS	limited alphanumeric usage
42.	P-DESIGNATED-LANDMARK	limited alphanumeric usage
43.	P-INTERIOR-LANDMARK	limited alphanumeric usage
44.	P-SCENIC-LANDMARK	limited alphanumeric usage
45.	P-HISTORIC-DISTRICT	limited alphanumeric usage
46.	P-LND-STATUS-DATE	date or blanks
47.	P-LND-PUBLIC-HEARING-DATE	date or blanks
48.	P-LND-VIOLATION-DATE	date or blanks
49.	P-AEU-SOURCE	blank, H, S, R or O
50.	P-AEU-ENTRY-DATE	date or blanks
51.	P-ADDED-DATE	date or blanks
52.	P-UPDATE-DATE	date or blanks
53.	P-VERIFY-DATE	date or blanks

Conclusion, in all cases, the results were indicative of a proper coding for the field.

BIS Reports

ENFORCEMENT

Report Name (BIS)	Report Name	Frequency	Purpose
ECBBINFR	Infraction Code Status Report, Violations Delivered between xx/xx - xx/xx	Occasionally	List; for pending violations containing designated infraction code (s), the violation number, and place of occurrence, disposition and compliance status.
ECBBSGS	AEU Status Report for Signs For the Boro of xxx Served xx/xx thru xx/xx	Monthly	
ECBBSGC		Monthly	
ECBBOWNR	ECB Violations "Owner of..." report, Violations Issued Between xx/xx - xx/xx	Monthly	
ECBBXHIB	Exhibits Attached to Violations Issued xx/xx - xx/xx	Monthly	
ECBBINFB	Infraction Code Status Report, Violations Served between xx/xx - xx/xx	Monthly	
UCSERV	Violations Served by Inspector by Unit Code	Monthly	
ECBB2OFF	ECB Violations with Multi-offenses, Violations Issued between xx/xx - xx/xx	Monthly	
TGRENPMT	Renewal Permits Issued, by Location	Occasionally	
TGARA	ARAs Processed by all Admin Centers, for period of xx/xx thru xx/xx	Occasionally	
ECBBCAL	Calendar Report, ECB Violations with Hearing Date of xx/xx/03	Daily	Calendar Report
NLIRPT04	List of BIS Permits Filed by Selected Applicants	Monthly	
NLIRPT05	List of PRA/ARA Jobs Filed by Selected Applicants	Monthly	
COMCAT2 RPT#17	Management Report: Complaints in Borough: City-wide, Open Complaint in Category 74...	Monthly	Overnight BIS report for open Padlock complaints
NLINBTCH		Monthly	

IAD

Report Name (BIS)	Report Name	Frequency	Purpose
OPEND14		4-5 times/wk	
JOBS		4-5 times/wk	
PE-RA		4-5 times/wk	
ADY810		4-5 times/wk	
GC		4-5 times/wk	
ELEV		4-5 times/wk	
JOBS		4-5 times/wk	
PERMIT		4-5 times/wk	
PRTMARZ		4-5 times/wk	
BOILER		4-5 times/wk	
MARZIO		4-5 times/wk	
PROFILE		4-5 times/wk	
MARZIOPM		4-5 times/wk	
PRODTEST		4-5 times/wk	
TESTPROD		4-5 times/wk	
	List of BIS Jobs Filed by Selected Individuals		
	Permits for contractor xxx Issued from xx/xx through xx/xx		

**Cranes & Derricks
(Complaints)**

Report Name (BIS)	Report Name	Frequency	Purpose
COMBJUR1	Management Rpt.: All Open Complaints - priorities 'A' and 'B', plus overdue Open Complaints – Priorities 'C' and 'D'	3-4 times/wk	

Construction Reports

Report Name (BIS)	Report Name	Frequency	Purpose
	Open Complaints – All	Daily	
	Open/Overdue by Borough	Daily	
	Complaints Aging Report	Bi-weekly	
COMBOAB2	Open/Overdue – Construction Only; Management Rpt.: Construction Complaints, Open Priority 'A' plus Overdue Priority 'B' (25+ days)	Daily	
COMBCAT2	Complaints by Specific Category; Management Rpt.: Complaints in Boro xx, Open Complaints in Category xx - xxx - priority xx	As needed	
	Open/Overdue in Specific CB		

TCU

Report Name (BIS)	Report Name	Frequency	Purpose
DOBFPPC	Job Statistics Report, ProCert vs. Regular Plan Exam, Reporting Period: xx/xx thru xx/xx	Weekly	
DOBFPCJ	Weekly Listing of ProCert Jobs, Date Range: xx/xx thru xx/xx, Borough: xxx	Weekly	
SELFCERT	Weekly Listing of Procert Jobs in status Q-R-U-X by Status Date, Date Range: xx/xx - xx/xx, Borough: xxx	Weekly	

Customer Service – Plan Exam Appts.

Report Name (BIS)	Report Name	Frequency	Purpose
	Weekly DOB - Agent Statistics	Weekly	Plan Exam Appts., Generated by Customer Service Unit
	Daily DOB - Agent Statistics	Daily	Plan Exam Appts., Generated by Customer Service Unit
	Monthly DOB - Agent Statistics	Monthly	Plan Exam Appts., Generated by Customer Service Unit

PMA

Report Name (BIS)	Report Name	Frequency	Purpose
CDF - DATA5		Monthly	(Kathy)
CDF - DATA4		Monthly	(Kathy)
CDF - DATA3		Monthly	(Kathy)
CDF - DATA2		Monthly	(Kathy)
CDF - DATA1		Monthly	(Kathy)
CDF – NONSCA		Monthly	(Kathy)
COMPNEW3	Database dump	2 times/month	Database dump (Mark S.)
ALLJOBS MILESTON	Database dump	Every other month	Database dump (Mark S.)
REQ-ITEM NB-A1	Database	Every other month	Database (Mark S.)
PLUMB WORKORDR	Database	Monthly	Database (Mark S.)
BECINSP BORODATE	Database	Monthly	Database (Mark S.)
ACDF ALLJOBS	Data dump: All Jobs that are in A or C or D or F status in BIS	Weekly	
STATS EXAM	Data dump: All Jobs that have gone through first review in a given period	Weekly	
FJR SEND	Number of Permits Issued in each Boro in a given period	Weekly	

Manhattan Borough

Report Name (BIS)	Report Name	Frequency	Purpose
KAREN - PREFID	Jobs Pre-filed By [Pre-filer], From xx/xx thru xx/xx	As needed	
DOBFPSXT PLXSTATS	Plan Examiner Statistical Productivity Report, Report of Jobs Approved/Disapproved, From xx/xx to xx.xx	As needed	
DOBFAUST AUDSTATS	Plan Examiner Statistical Productivity Report, Report of Self-Certification Jobs Audited, From xx/xx to xx.xx	As needed	
STAFF PERFORM (DOBJOBS)	DEAR/PAA Productivity Report for User ID: xxx, Date: xx/xx	As needed	
KAREN - DEARID	Jobs Entered via DEAR by Selected Individuals	Quarterly	
KAREN - PREFID6	Jobs Prefiled By Selected Individuals, From xx/xx thru xx/xx	Daily	
BISFRPRT	1st Review Examiner Jobs, From xx/xx to xx/xx	Weekly	
BISTFRST	1st Review Examiner Jobs, From xx/xx to xx/xx	Weekly	
FJR send		As Needed	A cumulative summary report of PAA's data entered and permits issued.



EXECUTIVE OFFICES
280 BROADWAY, NEW YORK, NY 10007

PATRICIA J. LANCASTER, AIA, Commissioner
(212) 566-5000, TTY: (212) 566-4769
Website: NYC.gov/buildings

Julie M. Lubin
Director
Program Management and Analysis
(212) 566-3529
(212) 566-3877 Fax
Email: juliel@buildings.nyc.gov

June 21, 2004

Greg Brooks
Deputy Comptroller for
Policy, Audits, Accountancy & Contracts
The City of New York
Office of the Comptroller
1 Centre Street
New York, NY 10007-2341

Re: Draft Audit Report on the
Building Information System of the Department of Buildings
Audit Number: 7A04-101

Dear Mr. Brooks,

This is in response to the recommendations of your above mentioned Draft Audit Report. The Department of Buildings (Buildings Department) was pleased that the above-referenced audit found that the Building Information System (BIS) functions reliably, is secure from unauthorized access and is an effective tool for recording and monitoring violation, permit, complaint, inspection and licensing activity. However, the Department disagrees with the two recommendations contained in the Draft Audit Report, and is providing the following to help correct erroneous information contained in the findings.

Specific Responses to Recommendations

Recommendation No. 1: Establish application software controls that ensure that all information entered in BIS are accurate.

Response: The Buildings Department agrees with the intent of this recommendation, but disagrees with its substance. The findings that it was based upon are unsound. The findings are erroneous in the following ways:

- a. **“The data integrity tests found more than 11.5 percent of the property records in BIS were incomplete or incorrect. Specifically, 99,919 (10.675 percent) of the 936,030 records in the Property database in January 20004 had incorrect or missing Zip Code data.” Draft Audit Report p.5.**

As explained in the exit conference, the zip code data referred to is merely vestigial, in that it is never used, and in fact, is not even displayed on any BIS screen.¹ This zip code information was uploaded to BIS when the system was first developed eighteen years ago. The fact that the zip code data in the BIS Property file is missing does not pose any data integrity or other problems, because there is valid zip code data displayed via BIS. The valid zip code data upon which the public relies (via BIS-on-the-Web) is derived from the Department of City Planning’s Geosupport system. The zip code relating to an owner’s mailing address is derived from the Department of Finance (see footnote 2 below.)

- b. **“In addition, 8035 records (.858 percent) had incorrect or missing Tax-Block and/or Tax-Lot data fields. The existence of incorrect Tax-Block and Tax-Lot information in the BIS database resulted from problems with data transmitted from the Department of Finance.” Draft Audit Report p.5.**

The absent block and lot information in the BIS database did not result from problems with data transmitted from the Department of Finance (“DOF”). In fact, new property records are generated in BIS without any electronic data transmission from DOF.² Rather, new property records are generated in BIS when an applicant brings an RP604 (a DOF form) showing tentative lot numbers assigned by DOF to the Buildings Department upon filing a Subdivision or New Building application. For all pre-existing blocks and lots, the data was obtained from, or is validated against, the Department of City Planning’s Geosupport system.

We reviewed the 8035 records which contain zeros or blanks in the block and lot fields and found that they fall into four general categories:

- (i) New buildings or properties in progress (properties not yet recognized by the Department of City Planning)-for new buildings in progress, the Buildings Department creates a “dummy” or temporary Building Identification Number (“BIN”). These “dummy” BINs allow the public to file applications with the Buildings Department for properties that have only tentative lot numbers and unvalidated addresses (the new address provided by the Borough President may not appear in Geosupport.) Ultimately, when the final lot numbers are provided

¹ When we questioned the Comptroller’s staff at the audit exit conference about the meaning of “incomplete or incorrect”, we were told that those terms actually meant a series of zeros in the field, or that the field was blank (no data in field.) Therefore, it is not correct to say that the data was incomplete or incorrect, rather, the fields were simply not populated.

² The Department does regularly import data from DOF pertaining to previously established property records. This data primarily pertains to parcel profile, owner, and tax exempt status. This data appears on the BIS Property Profile Overview, and is housed in the BIS Property file, but not in the field that the Comptroller used. The Comptroller used a field called P-ZIP, whereas owner zip code information is contained in one or more of the following:

P-FIN-OWNER-CITY-STATE-ZIP
P-FIN2-OWN-CT-ST-ZIP
P-FIN-MAST-ZIP
P-FINAVM-OWNER-ZIP

by DOF to the Department of City Planning, and the address is validated, the Buildings Department will update its records to replace the dummy BIN with a valid BIN. At that point, all the valid geographic references that exist in Geosupport (including block and lot) will be picked up and displayed in BIS.

- (ii) New buildings or properties in progress (properties have been created in Geosupport, but they were not in the last release.)- Geosupport updates are released on a quarterly basis. If DOF and the Buildings Department do not provide DCP with final lot numbers and requests for valid BINs within a certain window, Geosupport will not reflect these geographic references for another cycle. The Buildings Department, as well as other agencies, run Geosynchronization programs in order to pick up these changes.
- (iii) Address was entered by complaint prior to 1995-Prior to 1995 the Buildings Department would create an address in BIS, without a block and lot, in order to allow a complaint to be filed against that address. That policy is no longer in effect.³
- (iv) Address is a pre-BIS placeholder. These addresses were also assigned "dummy" BINs and were put into the BIS system in order to load data about pre-BIS job filings (including demolitions) that took place on these sites.

c. **"In March 2004, we reexamined the records in which we found errors during our January 2004 search of the Property database. We found that the Department had made progress in correcting the problem of missing data for certain records. The Department reduced the number of missing Zip Codes to approximately three percent of the 936,030 records in the Property database. However, it only minimally corrected the problem of missing Tax-Block and/or Tax-Lot records." Draft Audit Report p.6.**

This series of sentences reveals the Comptroller's failure to understand the nature of BIS, BIS-on-the-Web, and the way the City creates geographic references (e.g. block, lot, address, BIN) for property. The Comptroller used a BIS flat file data set to do its analysis in January. In March, instead of requesting another flat file⁴, according to what was stated at the exit conference, it checked the records in question via BIS-on-the-Web. As stated in section "a", above, the Buildings Department does not display the zip code data in the Property file on any BIS screen. The zip code data that the Comptroller found in March via BIS-on-the-Web was coming from a live link to Geosupport. The fact that block and lot records were not updated is due to the reasons articulated in section "b", above. While the Department does do manual research to correct records, systematically replaces "dummy" BINs with valid BINs, and regularly runs Geosynchronization programs, in this case, the "work" was merely pre-existing programming done in order to create BIS-on-the-Web.

³ Note that one can still enter a complaint on an invalid address, however, that address is not maintained in the BIS Property file. One can only track that complaint via complaint number.

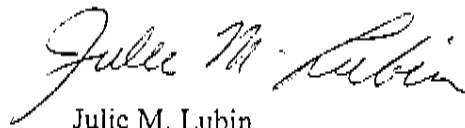
⁴ The Buildings Department has no record that a request for a subsequent file was made by the Comptroller, nor do we have a record of having sent one via DoITT.

Recommendation No. 2: Establish policies and procedures with data-originating agencies to reduce the overall missing-data problem attributable to those agencies to a more acceptable rate of less than one percent of total records.

Response: The Buildings Department agrees with the spirit of this recommendation, but disagrees with its substance, as it is based upon a misunderstanding of how the Buildings Department obtains data originating from other agencies.

There is no need to establish new policies and procedures with data-originating agencies because, as discussed above, the data is not missing; there is just a time lag due to manual processes and due to the update cycle of Geosupport. Unfortunately, the Comptroller did not discuss its methodology with us prior to the exit conference, nor did it ask us any questions about the data that gave rise to its concerns. If it had done so, we would have explained the existing policies and procedures by which geographic references are created in the City and in the BIS system. The Department of Buildings meets regularly with the Departments of Finance and City Planning in order to improve and refine the ways in which we share data, particularly geographic data. The Department of Information Technology and Telecommunications is assisting us in this effort. Furthermore, technological innovations such as BIS-on-the-Web and DOF's ACRIS have enabled us to leverage the Department of City Planning's Geosupport system to better serve the public.

Sincerely yours,



Julie M. Lubin