5 PENSION ADMINISTRATION SYSTEM (PENFAX)

BACKGROUND

5.1 The Minister of Finance is assigned responsibility for the administration of the Public Service Superannuation Fund (PSSF) by the Public Service Superannuation Act. The Minister of Finance is also appointed as Trustee and is assigned responsibility for general supervision and management of the Nova Scotia Teachers' Pension Fund (NSTPF) by the Teachers' Pension Act. While the Minister is also responsible for other pension funds or accounts, this audit focused on the new pension administration computer system, Penfax, and its related controls, which, at present, is used in the administration of the PSSF and NSTPF.

5.2 The Minister of Finance has delegated, through the Deputy Minister of Finance, administration and management of the pension administration systems to the Pension Services Group(PSG) of the Department of Finance. To assist in the performance of its duties, the PSG implemented the new Penfax system. The Penfax system is primarily a data storage and calculation software. Its function is to accurately record and store all details of the employment history of a plan member, including pension contributions, salary history and service history, and to calculate the pension, commuted value and other information as required.

5.3 The Penfax system has been in a prolonged implementation phase over the past seven years with various problems preventing full operation of the system. We commented on these matters in Chapter 3 of the June 2004 Report of the Auditor General (see paragraphs 3.11 to 3.18), with further commentary in Chapter 3 of the December 2004 Report of the Auditor General (see paragraphs 3.22 to 3.25).

5.4 The original Penfax project commenced in August of 1998. The initial target completion date is not clear from the original contract but appears to have been June 30, 2000. We have been informed that the revised project, known as the Penfax Completion Project, has now been completed as at March 31, 2005. Exhibit 5.1 on page 78 contains a system overview chart.

5.5 The original budget estimate for Penfax was $1,208,000. We have been informed that the costs of the Penfax project to July 2004 were $4,342,738 and the costs of the Penfax Completion Project from that date to completion were $378,911.

5.6 The original project was not reviewed or approved by government's Business Technology and Advisory Committee (BTAC), and did not have a steering committee in place until the end of 1998, approximately six months after the project had started. As a result of problems in the management of the Penfax project, it appears that the original steering committee was quite ineffective.

5.7 An assessment of the status of the Penfax implementation was prepared in July 2004 by the external contracted project manager of the Penfax Completion Project, and submitted to the new steering committee that had been formed to oversee that project. This assessment reported that:

- Of 23 originally contracted deliverables, 19 were delivered but 8 of these still had problems to be resolved.
- 56 change requests were raised through the project. All have been resolved.
- A total of 14 deliverables were identified to complete the project.

5.8 The Penfax system does not manage the investment of the pension funds nor does it perform the pension payroll functions. These two aspects are managed separately from the Penfax system. We reported separately on Pension Asset Management and Governance of Retirement Benefits in Chapter 5 of the December 2004 Report of the Auditor General. As of April 2005, the pension payroll function is being converted to the new SAP Human Resources module as part of the government's eMerge project.

5.9 The following statistics have been extracted from the most recently published actuarial reports on the funds. These reports are for the year ended December 31, 2003.

	Nova Scotia Teachers' Pension Fund	Public Service Superannuation Fund
Annual Contributions	$155,513,000	$73,000,000
Active Members	13,065	14,018
Retirees and Beneficiaries	8,815	10,094

RESULTS IN BRIEF

5.10 The following are our principal observations presented in this chapter.

- The controls for the general computer environment for the Penfax system were assessed as being adequate. There are some areas where improvements should be made.
- The controls over completeness, accuracy, authorizations and the adequacy of management trails were assessed as being adequate. There are some areas where improvements should be made.
- As the Penfax Completion Project final report is still in progress, we have not had an opportunity to review the final assessment of the deliverables of the Completion Project. We have recently been informed by management that the cost of the Penfax Completion Project was $378,911.

- The cost of the Penweb component, which was added to the original Penfax project scope in December 2001, was approximately $1,000,000. This does not include the cost of PSG staff working, often full time, on this project. The Penweb component was not completed and implemented. The government and the pension funds have received little or no value for the money expended on this element of the project.

AUDIT SCOPE

5.11 The objectives of this audit were:

- General computer controls - to review and assess the adequacy of the controls for the general computer environment; and

- Application controls - to review and assess the adequacy of controls over the processing of computer applications, focusing on the completeness, accuracy and authorization of transactions as well as the adequacy of management trails.

5.12 Audit criteria were developed to assist in planning and performance of this audit (see Exhibit 5.2). These were primarily derived from the Canadian Institute of Chartered Accountants' *Information Technology Control Guidelines*. The criteria were discussed with senior management of the PSG and were accepted as appropriate.

Additional Coverage

5.13 We reviewed the activities of the PSG in addressing the findings of the independent audit report of March 6, 2004 on the Pension Administration System Implementation Project.

5.14 We reviewed documentation concerning Penweb, a component of the Penfax implementation project added to the original scope of the project in December 2001.

5.15 We enquired as to the status of the interface between the pension administration system and the eMerge project.

PRINCIPAL FINDINGS

General Computer Controls

5.16 General computer controls are controls which relate to the environment within which computer applications are developed, maintained and operated. They apply to all the computer applications of an entity. The objectives of general controls are to ensure the proper development and implementation of applications, and the integrity of program and data files and computer operations. Examples of general computer controls would include:

- policies and practices regarding physical environment such as air conditioning, fire protection, etc.;
- policies and practices regarding access control, specifying who may approve access to the system by users;
- policies and practices regarding changes to the computer system or its programs; and
- procedures defining the back-up of data.

5.17 General conclusion - The results of our audit indicate that in 2004-05 the controls for the general computer environment for Penfax were adequate. There are some areas where improvements should be considered and these are described below.

Disaster Recovery and Business Continuity Planning

5.18 At present, the PSG has neither a disaster recovery plan nor a business continuity plan. The lack of these plans could cause an interruption of services to members and an undue delay in the resumption of services in the event of a disaster or other significant business interruption.

5.19 Disaster recovery plan - The overall purpose of a disaster recovery plan is to provide for an orderly and timely restoration of services in the event of an unexpected interruption through the failure of one or more key infrastructure components. All systems need a disaster recovery plan. The complexity of the plan will be affected by the complexity of the computer system, the ease of obtaining replacement equipment, the relationship of the system to external users and the relationship of the system to the government's total infrastructure.

5.20 The infrastructure for the Penfax system is maintained by the Resources Corporate Services Unit(CSU). While the CSU would provide the staff and technical expertise for replacing or repairing damaged infrastructure, the PSG, as manager of key aspects of the administration of the pension funds, is ultimately responsible for the continued operation of the system. As such, the PSG should prepare a disaster recovery plan including planning and coordination with other government entities and service level agreements specifying the PSG priority for access to CSU staff in the event of a disaster.

Recommendation 5.1

We recommend that the PSG establish and test an appropriate disaster recovery plan for the Penfax system. This should include service level agreements with entities external to the PSG.

5.21 Business continuity plan - As there is a need for a disaster recovery plan, there is also a corresponding need for adequate business continuity plans. These are required to identify acceptable levels of services that need to be provided in case of an interruption of service. One potential cause of the interruption of service may be inability to access computer systems.

5.22 The primary responsibility for business continuity planning for the Penfax system and its functionality is with the PSG. It is the responsibility of the business owners of a service to ensure there are adequate business continuity plans in place, regardless of the cause of the interruption of service. There is a corporate responsibility to recognize the importance of business continuity plans and to ensure they are a priority.

5.23 In other audits we have recommended that government-wide policies be established regarding business continuity plans and we repeat that recommendation here.

Recommendation 5.2

We recommend the establishment of a policy requiring departments to have an appropriate business continuity plan, and that this plan be kept up-to-date. Further, we recommend the establishment of an initiative to undertake the development and implementation of a corporate business continuity planning process.

Recommendation 5.3

We recommend that, in conjunction with the development of a corporate business continuity planning process, the Business Technology Advisory Committee (BTAC) examine the needs for a corporate disaster recovery planning process, as it relates to the provision of information technology services.

Information Technology Resource Management

5.24 For reasons of efficiency and control, the government has concentrated IT services into a number of Corporate Service Units (CSUs). The Resources CSU maintains and operates the servers that run the Penfax system. This transfer of operational responsibility does not change PSG's ultimate responsibility for managing the IT resources necessary for delivering services to members. When operational responsibility for IT is passed to an external entity, best practices indicate that the relationship should be regulated by a service level agreement. With such an agreement both parties are aware of their responsibilities and there is a reduced chance of neglecting some significant activity.

5.25 We noted, in paragraph 5.20 above, the risk that could occur in the event of a significant interruption of services when a service level agreement was not in place. In ordinary operations, risks arising from the lack of a service level agreement could include:

- failure to update operating systems;
- failure to update storage or processing capacity;
- delays in processing application changes;

- disputes concerning payment for necessary system upgrades;
- delays in recognizing systemic error conditions; and
- uncontrolled system changes if change management processes are not included.

5.26 Our audit did not detect any instances of the occurrence of these risks.

Recommendation 5.4

We recommend that PSG management enter into appropriate service level agreements with the Resources CSU.

Information Technology Security

5.27 Access to Penfax is controlled, first by the Department of Finance's network access control system, which limits access to the directory where the Penfax software files reside. Subsequent control is by Penfax's own access control system which restricts access to certain functions depending on the role of the user. We reviewed this access control system and found that, except for the access capabilities of the "Super-Users" discussed in paragraphs 5.31 to 5.32 below, the controls were adequate.

5.28 The network file server on which the Penfax software and database files reside is located in an appropriate location, with good physical security, appropriate fire prevention systems, and appropriate backup power sources.

5.29 The system databases are backed up daily. On a weekly basis, a set of data is stored at a secured off-site location. This backup system is appropriate to allow recovery from minor processing problems. In the event of a major disaster, it should allow recovery once a processing location and hardware are established.

5.30 There are certain deficiencies of policy and practice that should be considered.

- There is no periodic internal review of the Penfax system security by management. A periodic review could identify and mitigate areas of particular risk. Additionally, in the information technology world, threats to computer systems are constantly changing and therefore a periodic review should be a component of standard management procedures.

- The PSG does not have policies regarding security and confidentiality. While all the staff we interviewed were aware of the need for confidentiality, a well-formulated policy would help them deal with issues that arise in any confidential situation. A security policy would clearly assign roles and responsibilities for allowing access and other matters.

- Policies should require PSG staff to sign security and confidentiality agreements. Signing of agreements often focuses employee attention on these matters which improves compliance.

Recommendation 5.5

We recommend that management periodically review security matters surrounding the Penfax system.

Recommendation 5.6

We recommend that the PSG develop security and privacy policies and communicate these to staff. The signing of a security and confidentiality agreement by employees should be an integral component of these policies.

"Super-Users"

5.31 Most computer application systems provide for the granting of powerful user access rights to all aspects of the systems. This is usually referred to as a "Super User" and is intended to facilitate initial setup of a system as well as to act as an emergency user when significant unforeseen circumstances occur. Industry standards and practices strongly suggest that the granting of such powerful access rights be highly controlled. They should only be used for specific instances and in each case with the express permission of senior management. A "Super-User" could accidentally damage data files and could also circumvent most controls built into a system.

5.32 During the course of the audit we determined that there were three staff with "Super-User" access privileges to the Penfax system. Subsequent to raising this matter with management, the number was reduced to two. Management has informed us that the security structure of Penfax requires that these users have these powerful rights. Management is investigating the possibility of a "double sign-off" for some of the tasks required by the users. Additionally, if the designers of Penfax ever revise their security architecture, PSG management will seek a more reasonably restricted set of user rights.

Application Controls

5.33 Application controls are controls that relate to the processing of transactions and data of a specific application. The objectives of application controls are to ensure the completeness, accuracy and authorization of processing. They also ensure that a management trail is maintained. The following are examples of application controls:

- edit checks on data entry fields such as ensuring numeric data is not placed in a text field and vice-versa;
- access controls which would restrict users to using only certain parts of the application;
- change management controls; and
- production of reports of transactions and other activity.

5.34 General conclusion - The results of our audit indicated that controls over completeness, accuracy and authorizations as well as management trails were adequate. There are some areas where improvement should be considered.

Key Controls

5.35 Examples of the more significant key controls are identified below:

- Members are provided with all supporting information for their pension, or other payment.
- When a Client Services Consultant (CSC) works on a file, that work is reviewed and confirmed by a second CSC.
- All cheque requests and requests to set up, or change, a regular pension payment to a member are reviewed and authorized by a manager prior to being disbursed.
- Confirmation of service is requested from a retiring member's employer.
- Penfax contains many automated edits to assist in the accurate entry of data.

5.36 We commend PSG for its procedure manual. While a few procedures are not up-to-date, overall it is a very useful tool providing detailed procedural reference for the CSCs and training to new staff.

5.37 In reviewing members' files we found a number of files with no direct evidence of a second review. Although we have been assured that these reviews actually are occurring there is no requirement for a formal sign-off by the reviewer. Additionally, the nature and extent of the review are not described. The failure to require review sign-off could result in errors in a file or unnecessary work being done.

Recommendation 5.7

We recommend that a sign-off procedure for file reviews be designed and implemented. A check list could be inserted into the member file noting review procedures with sign-off required when the work is completed.

Document Management

5.38 We found that the PSG has problems with its filing system. For example, we noted:

- termination and pension files for 2003 and 2004 had not been scanned into the document imaging system;
- 3 of 9 termination files tested were missing screen shots of Penfax calculations that are required to be filed; and
- in many cases staff had difficulty locating files for our examination.

5.39 This problem is compounded by the fact that the PSG has not established policies under the Provincial STAR/STOR records management policies.

5.40 Part of the original design for Penfax envisioned that all documentation would be stored electronically. A document imaging system was chosen and installed, at a cost of approximately $12,800. However it has not been successful. We have not examined the reasons for this lack of success. We were informed that after the installation of the imaging software, no policies or procedures were developed for its use. Consequently staff were not certain what should be scanned. At present, only information for NSTPF is being scanned and not all documentation is being scanned. In some cases, the filing clerks are two years behind.

5.41 The volume of requests processed by the PSG for information on pensions is considerable. PSG management recognized that a work-flow control system could increase efficiency and improve service to members. The PSG developed the Automated Tracking Log (ATL) system. It has not been successful and is being used only sporadically at present which could result in delays in file completion. The inability to track work could prevent management from identifying bottlenecks in the PSG's procedures. Management of PSG is investigating work-flow control software to determine which software best meets its requirements.

Practice Contrary to Policy

5.42 We found one staff member regularly engaged in a practice contrary to established policy. When asked to estimate future retirement benefits for members, the staff member would process hypothetical adjustments to the live data in a member's account. This allowed him to prepare the required estimates. He would then reverse the adjustments. If the hypothetical data were not correctly removed, live data could be in error. When this practice was brought to the attention of PSG management, action was promptly taken to discontinue the practice.

Data Integrity

5.43 The PSG receives data on plan members from 39 employers for the PSSF and NSTPF plans. This data is stored in Penfax and is used by the system to calculate the pensions, commuted values, estimates, marriage breakdown divisions and other information needed by members. The PSG has been aware for some time that some of this data received from employers is inaccurate. While it appears that

the actual transmittal and reception of the data is accurate, errors are originating in the data prepared by the employers. Due to the complexity of compensation agreements, a certain employer error level may be inevitable. However, PSG management believes that the error level is too high.

5.44 These errors are frequently detected when member requests are processed in Penfax. However, there is always a risk that an error will not be identified and that a pension payment will be incorrect. Additionally, the overhead expenses of the PSG are paid from the income of the pension funds. The extra staff time spent on correcting these errors is being charged to the funds but is caused, in part, by the employers.

5.45 To address this issue, PSG management has undertaken two initiatives. The first was the "Data Clean up Project" which commenced early in 2004. This involved six staff examining the data recorded in Penfax. Reports were generated to identify files with data characteristic of errors. Each file was then examined to determine if the data was in fact erroneous. If so, it was corrected through verification and confirmation with the employers. This project was delayed for several months due to shortage of staff. We have been informed by management that this project has recently been completed.

5.46 The second initiative involves contacting the employers and discussing the causes of the errors. Management indicated to us that several meetings have been held to date with very positive results. As a result of these meetings, a number of common causes of errors were identified and procedures were developed to prevent or remediate these errors in the future.

5.47 In our review of the data transfer procedures, we noted that almost every employer had different procedures for the transfer of data. While the information in the data files has been standardized, items such as the frequency of transfer, names of the files, number of files used to transfer data, procedures for error correction and procedures for adjustments frequently differed.

Recommendation 5.8

We recommend that PSG management continue with its data integrity initiatives and contact with employers to prevent errors from occurring in the pension source data.

Recommendation 5.9

We recommend that data transfer procedures between employers and PSG be standardized, to meet the requirements of the Penfax system, and that employers be accountable for data accuracy.

Penfax Completion Project

5.48 In our December 2004 Report, we commented that PSG management had undertaken several steps, including the following, to address the findings of the independent audit report of March 6, 2004. These steps became known as the "Penfax Completion Project" and included the following.

- A steering committee was reestablished and provided terms of reference that set out the specific roles and responsibilities of the parties involved. This committee has been meeting regularly.
- A project charter was developed and approved by PSG management.
- A full-time project manager was contracted to oversee the project.
- A detailed assessment was performed by the project manager of completed and remaining work.
- Of the 23 deliverables in the original Penfax contract, 19 had been delivered at the start of the completion project. Eight of these 19 required additional work. The completion project identified 14 additional deliverables required to bring the project to a satisfactory conclusion.

5.49 We reviewed the minutes of the steering committee, including the status reports of the project manager. The committee met regularly and its discussions and decisions were well documented. Good planning documentation was prepared.

5.50 A target date of March 31, 2005 was set for completion. We were informed that this target date was achieved and that a project completion report was being drafted by the project manager.

5.51 As the completion report was still in progress, we did not have an opportunity to review the final assessment of the deliverables of the Penfax Completion Project. We were provided with a draft of the project completion report which showed the cost of the completion project to be $378,911.

Penweb

5.52 In 2001, during the development of Penfax, at a time when that project itself was already late and over budget, PSG and the developers of Penfax decided to explore the potential for users to access the Penfax system over the Internet. The project was called Penweb. We note that the present senior management of the PSG were not the managers who made these decisions.

5.53 Planning problems - In our June 2004 Report (see Chapter 3, paragraphs 3.11 to 3.18), commenting on the independent audit report on the Penfax implementation project, we noted serious findings relating to the management and control of the project. Penweb was treated as an extension of Penfax by the developers and subject to the same serious findings. For example, there was inadequate documentation of the decision to implement Penweb. It was treated as a variation of the Penfax project. No documented cost-benefit analysis was available for our review and there was no project plan, project charter or even a statement of an

objective. The Penweb system has been abandoned since it failed to produce a working system.

5.54 Project costs and results - The total expenditures on Penweb are difficult to determine as the development costs were blended with charges for Penfax itself. An estimate of the cost of Penweb has been made by management. The estimate is based on direct expenditures and an estimate of the portion of blended charges that should be appropriately allocated to Penweb. On this basis, the cost of Penweb was approximately $1,000,000. This does not include the cost of the time of PSG staff working, often full time, on the project. The government and the pension funds have received little or no value for the money expended.

5.55 Legal issues - For Penweb, the only document governing the relations between the PSG and the developer was a "Memorandum of Understanding". This document was signed by the Deputy Minister of Finance on behalf of the Minister of Finance, effective April 9, 2002 (approximately five months after the work on Penweb had commenced). It was very favorable for the developer in that the only items intended to be binding in the memo were the payments to be made to the developer and the developer's retention of copyrights to any developed software. It is unclear whether legal review and assessment were completed on the Memorandum of Understanding prior to signing, in order to adequately protect the interests of the pension funds and government.

eMerge Interface

5.56 Project eMerge is the implementation of the SAP Human Resources module. This project included the core government and the regional school boards. The core government system went live in April 2005. The regional school boards are planned to go-live late in 2005. Both the core government and the regional school boards pass employment information to the Penfax system.

5.57 As of late April 2005, not all the interface components between eMerge and Penfax had been tested and signed off. Management of the eMerge Project have advised us that two phases of testing were required:

- pre go-live with test and converted data; and
- post go-live for elements that trace changes over time and require data from the system in production.

5.58 Testing of the pre go-live was completed. However, the post go-live testing remains to be addressed pending the availability of the necessary production data.

CONCLUDING REMARKS

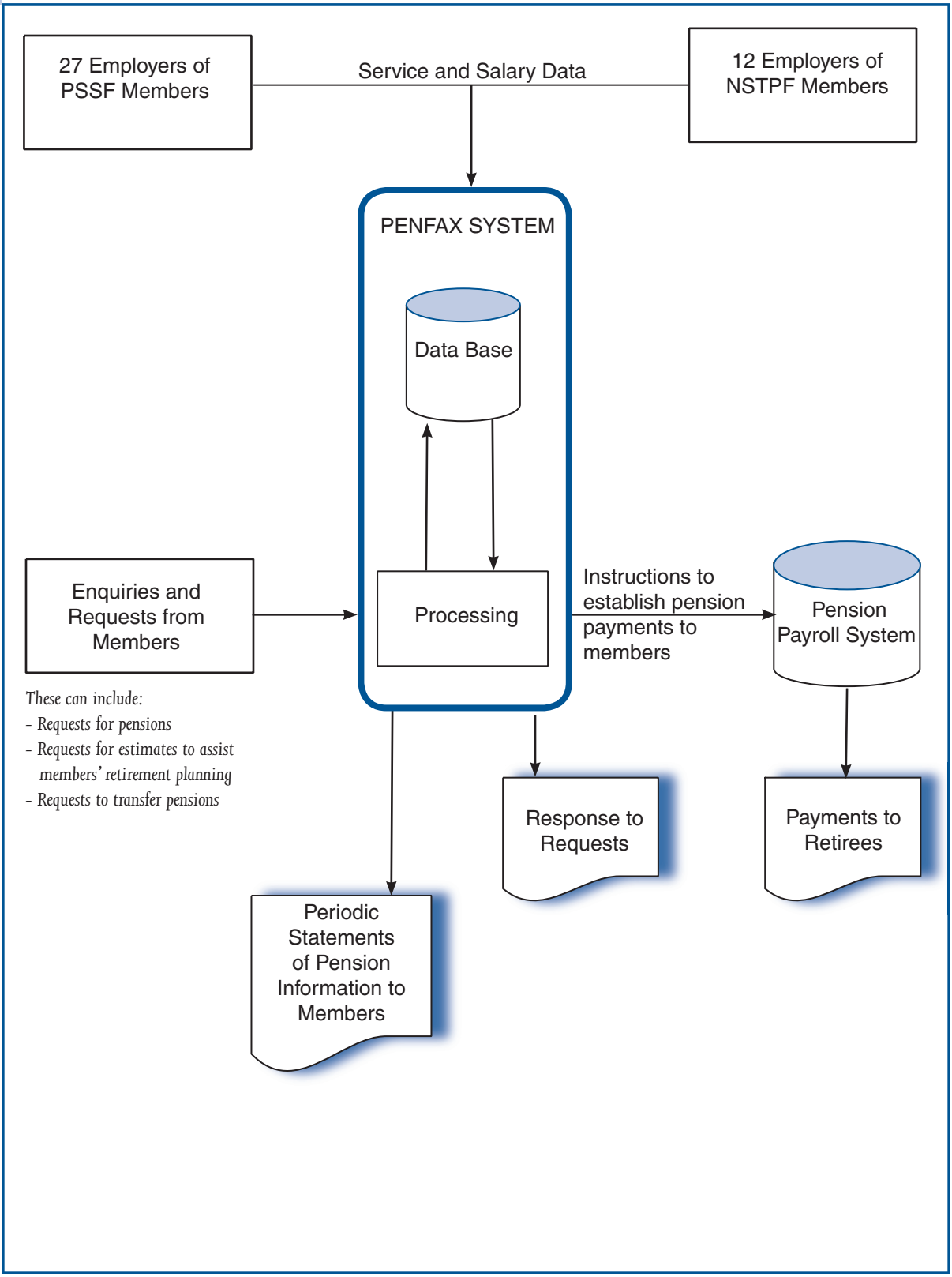
5.59 We have reported on the Penfax system implementation problems in the past. Although we repeat our concerns expressed in the previous Reports, this Report indicates that the system, as implemented, is functioning in a controlled manner, though improvements should be considered by management.

5.60 Further we note that the expenditures on the Penweb element, approximately $1 million, have achieved little or no benefit.

5.61 There are important lessons to be learned - some of them fairly expensive - by the Department of Finance and government overall from the Penfax implementation. We urge government to ensure that the lessons learned are appropriately documented so that future system implementations can benefit.

Exhibit 5.1

PENFAX System Overview



Audit Criteria

Exhibit 5.2

IT Controls - General Computer Environment

Criteria:

- There should be policies and procedures to ensure that systems are appropriately developed, installed and maintained.
- The hardware and system infrastructure should be housed in an appropriate operational environment.
- Systems and information should be secured and protected to prevent unauthorized access or use.
- System software change management procedures should be established to ensure the on-going reliability and integrity of systems.
- There should be policies and practices to ensure that end-user computing is appropriately supported and controlled.
- There should be a formal and detailed disaster recovery plan to support the enterprise's business recovery strategy.
- Management should ensure that business continuity plans are in place to ensure the ongoing continuity of critical business functions.

IT Controls - Computer Applications

Criteria:

- Application controls should be designed to provide assurance that all transactions are completely recorded.
- Application controls should be designed to provide assurance that all transactions are recorded accurately.
- Application controls should be designed to provide assurance that all transactions are properly authorized.
- Application controls should be designed to provide a management trail that enables all transactions to be related back to their origin and the key processes they have been subjected to.