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## GOVERNMENT SYSTEMS AND CONTROLS

### BACKGROUND

- 3.1** Government financial, program and other management activities are facilitated or supported by a variety of systems and control processes. These include a number of corporate or government-wide systems (e.g., Corporate Financial Management System - CFMS/SAP); or processes (e.g., annual business planning, budgeting and accountability reporting; procurement). There are also numerous entity or program-level systems and processes.
- 3.2** Government's business systems and technology initiatives are subject to oversight review by the Business Technology Advisory Committee (BTAC), which is a committee of deputy ministers reporting to Treasury and Policy Board (TPB). Initiatives within crown entities are governed by their respective governing board or other appropriate body.
- 3.3** Although not specifically quantified, the costs of acquiring, implementing, operating and maintaining systems and control processes within the Provincial public sector are significant. However, a more important factor is the quality and cost-effectiveness of the systems and control processes in mitigating financial and other risks of managing government programs and services.

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### RESULTS IN BRIEF

- 3.4** The following are our principal observations presented in this chapter.
- An audit of application controls in the government's corporate financial management system (CFMS/SAP) identified several significant weaknesses, many of which have been previously reported.
  - The second independent service audit of the SAP Customer Competency Centre at the Department of Finance, reported in April 2006, once again contained a reservation of opinion based on the nature and extent of general computer environment control weaknesses identified. The Centre provides the infrastructure and processing environment for a variety of public sector entities and their SAP applications.
  - Both 2006 audits of the government's corporate financial management system (SAP) reported significant system and control weaknesses, many of which had been reported in prior years' audits.
  - The results of the annual independent audit of control procedures over processing on government's large mainframe computer systems provide reasonable, but not absolute, assurance on the adequacy of controls.

- We are planning an audit of the SAP Human Resources (HR) module in the near future which will be reported in our December 2006 Report. The budget for the implementation of the SAP HR module for the Province and the School Boards has escalated to \$24.6 million from the original budget of \$5.7 million.

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## SCOPE

- 3.5** The Auditor General Act provides broad mandates for the Office to examine and report on the use and control of public funds or resources by government, its entities, and recipients of financial assistance. Management is responsible for the implementation and maintenance of appropriate and effective internal controls.
- 3.6** The purpose of this chapter is to provide summary observations and information on the government's systems and control processes in order to assist the House of Assembly, and its Public Accounts Committee, to hold government accountable for the adequacy of systems and controls over the use of public funds or resources. Other chapters of this Report may also include related observations as a result of audit examinations in specific areas or entities.
- 3.7** Certain of the comments in this chapter are not the result of formal, completed audits but rather the result of ongoing review and enquiry procedures, and are provided herein for information purposes only.

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## PRINCIPAL FINDINGS

### Audit of SAP Application Controls

- 3.8** In early 2006 we contracted with a public accounting firm to perform an audit of the application controls within the SAP system. The scope of this audit focused on the controls across the primary SAP business processes contained in the government's SAP corporate financial management system. The general computer environment controls surrounding SAP as well as the HR module of SAP were excluded from the audit scope.
- 3.9** The objectives of this audit were:
- to identify SAP application controls and SAP application control weaknesses in applicable business cycle areas; and
  - to conclude on whether the identified SAP application controls were operating effectively throughout the period of anticipated reliance.
- 3.10** The following conclusions were reported by the auditors in their letter dated April 24, 2006:

*"...Our conclusion on the reliability of SAP-based business process controls is as follows:*

- Generally speaking, our review indicated that the SAP application modules in scope for our review are configured to include the appropriate controls over transaction accuracy, validity and completeness; however, some weaknesses have been identified and recommendations for improvement have been provided in our Letter of Recommendations.
- Given the level of access granted to users within SAP, however, including the number of users who have access to execute incompatible functions within SAP, we conclude that SAP-based application controls were not operating effectively throughout the period of anticipated reliance and therefore recommend that they not be relied upon for purposes of the annual audit for any of the business cycles reviewed, specifically fixed assets, expenditures, financial reporting, revenue, and inventory.”

**3.11** As noted in the above conclusion, the level of inappropriate access granted to users of SAP was the primary reason the auditors could not conclude positively on application-based controls. The auditors identified 24 weaknesses in application controls and categorized them as follows:

- High Risk 5
- Moderate Risk 14
- Low Risk 5

**3.12** Several of these weaknesses have been previously reported as the result of prior audits performed in 2003 and in 1998. The 2003 report identified 5 of the 24 weaknesses while the 1998 report identified 12 of the 24 weaknesses. Further, 3 of these weaknesses were reported in both 2003 and 1998 and still remain unresolved.

**3.13** The nature, extent and history of the weaknesses reported should be of concern to management.

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**Recommendation 3.1**

**We recommend that management implement industry-recognized control best practices for SAP applications to address the weaknesses reported.**

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## **Service Audit of the SAP Customer Competency Centre of the Department of Finance**

**3.14** The Department of Finance operates and supports the SAP corporate financial management system for government as well as other public sector entities such as school boards and municipalities.

**3.15** These entities have responsibility for governance and management, and each have their own auditors who also require assurance as to the adequacy of controls surrounding their clients’ systems.

- 3.16** Assurance is provided through a service audit. An independent audit is performed at the request of the service providers (Finance) and the report is shared with the clients and the auditors of the clients of the service provider.
- 3.17** In 2004, the government contracted the services of a public accounting firm to perform a service audit of the SAP Customer Competency Centre (CCC) which is responsible for the management and maintenance of the government's SAP corporate financial management system. This was a multi-year contract requiring an initial audit of the controls at a point in time in November 2004. The contract then required a second audit to cover the period from November 2004 to March 31, 2005. This second audit was cancelled due to a shift in the focus of CCC's attention to implementation of the Provincial HR system. The next audit under the contract was to cover the period of April 1, 2005 to March 31, 2006. This latest audit was completed and a report was issued on April 7, 2006.
- 3.18** An excerpt from page 6 of the auditors' report in 2006 describes the audit as follows:
- "...The audit concentrated on the specified control objectives, minimum control standards, and control techniques which were established from published CICA control objectives and agreed by the Nova Scotia Department of Finance as being appropriate to ensure the adequacy of controls over access to, protection of, operation of, and management of shared services computer operations related to services provided by the CCC..."*
- 3.19** The initial audit of November 2004 resulted in a reservation of opinion by the auditors as the result of weaknesses identified. The 2006 audit also contains a reservation of opinion based on the nature and extent of weaknesses identified. Exhibit 3.1 on page 30 is the latest auditors' report on control procedures of the SAP Customer Competency Centre.
- 3.20** We have compared the auditors' reports dated 2004 and 2006. See Exhibit 3.2. The 2004 report identified 14 weaknesses across 9 of 33 control objectives. The 33 control objectives contained 130 control procedures. The 2006 report identified 30 weaknesses across 18 of 31 control objectives. The 31 control objectives contained 115 control procedures. Six of the weaknesses reported in 2004 were repeated in 2006. Further, in the executive summary of their report, the auditors itemize 22 of the 30 exceptions and categorize them as being significant findings. In their 2004 report, the auditors categorized 8 of the 14 exceptions as being significant findings.
- 3.21** It is important to note that a service audit covering a period of time provides a much higher level of assurance than a service audit at a point in time, and accordingly is a much more thorough audit of the service provider's stated control objectives. This may explain why there were more weaknesses noted by the auditors in their 2006 audit.
- 3.22** We note that recent correspondence from Finance management states
- "...The Department of Finance has reviewed this report and has already begun the process*

to action items that were identified in the report as control activity exceptions. This year's report includes management comments to provide additional background to your management and auditors. In some cases, corrective actions have already been taken. In other cases, we will need to work with our service providers and clients to either correct or raise the issue with them for corrective action."

**3.23** In reviewing management's specific responses to the noted weaknesses, their comments for each included in part "... but this control activity exception does not necessarily indicate that there is a high risk to the SAP operating environment."

**3.24** It is important to recognize that many of the reported weaknesses are assessed by the auditors as representing significant risks. Certain of these weaknesses are also of a basic, fundamental nature and would not be expected in a mature system such as the Province's SAP environment which was implemented more than nine years ago.

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### **Recommendation 3.2**

**We recommend that management implement additional control techniques to remediate the identified weaknesses in the control standards adopted by management.**

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**3.25** Subsequent to receiving a copy of the Section 5900 Report, management provided us a copy of the auditors' Letter of Recommendations. We note that the Letter of Recommendations contains an additional thirteen observations with recommendations which are not included in the Section 5900 Report.

**3.26** The auditors identified a total of 43 weaknesses and categorized them as follows:

	High Risk	Moderate Risk	Low Risk	Total
Section 5900 Report	9	9	12	30
Additional items in the Letter of Recommendations	<u>3</u>	<u>8</u>	<u>2</u>	<u>13</u>
Total	<u>12</u>	<u>17</u>	<u>14</u>	<u>43</u>

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### **Recommendation 3.3**

**We recommend that management provide information relative to these additional observations to all parties who were provided copies of the Section 5900 Report.**

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## **Government's Corporate Financial Management System - Summary Comments**

**3.27** The Nova Scotia government implemented SAP as its corporate financial management system on April 1, 1997. In the nine years since implementation,

several control-based audits have been performed and reported upon, each of which identified serious fundamental weaknesses in systems and controls:

- 1998 – SAP general environment and application controls
- 2003 – SAP general environment controls
- 2004 – SAP service audit, including general environment controls
- 2006 – SAP application controls
- 2006 – SAP service audit, including general environment controls

- 3.28** The audits performed in 2006 are still reporting serious system and control weaknesses, many of a basic, fundamental nature, and many of which have been reported in the prior years' audits noted above. Further, following our 2003 report in which we identified serious weaknesses in security access privileges, we were given assurances that certain practices were discontinued and no longer in use. We performed a separate analysis of these same security weaknesses in late 2005 and early 2006 which revealed that, contrary to the assurances provided, these same practices of deploying inappropriate, powerful access privileges took place frequently over the period from 2003 to early 2006.
- 3.29** Under the Provincial Finance Act, the Minister is ultimately responsible for the management of government's financial systems. Further, in Volume 1 of the Public Accounts of Nova Scotia there is a "Statement of Responsibility for the Consolidated Financial Statements of the Province of Nova Scotia" which includes the following in the third paragraph "*The government is responsible for maintaining a system of internal accounting and administrative controls in order to provide reasonable assurance that transactions are appropriately authorized, assets are safeguarded, and financial records are properly maintained.*"
- 3.30** The continuing existence of certain fundamental control weaknesses reflects poorly on how well government has been fulfilling this responsibility.
- 3.31** SAP has become a very widely-deployed system across the public sector of Nova Scotia. Currently, the SAP Customer Competency Centre is supporting almost all deployments of SAP in the Provincial and municipal public service. This includes the Nova Scotia government, school boards, regional housing authorities, several municipalities and, over the next few years, the Centre will be supporting the deployment of SAP to the District Health Authorities across the Province.
- 3.32** The combined impact of the two recent audits prevents us from placing reliance on the SAP general information technology environment controls and the application controls for our audit of the Public Accounts. Planning is now well underway for implementing SAP for use in the District Health Authorities across the Province. This adds yet another very significant element to the existing dependence on SAP as the financial management system for the public sector in Nova Scotia. It is vital that management identify, and take the appropriate steps to address, all the noted weaknesses in controls prior to implementation in the health sector.

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### Recommendation 3.4

We recommend management implement controls to address reported weaknesses. Further, and as previously recommended in 2003, this process should include the implementation and regular monitoring of control best practices for all aspects of the SAP applications.

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## OTHER MATTERS

### Provincial Data Centre Services

- 3.33** In the 1990s, government entered into contract arrangements to outsource its Provincial data centre processing requirements. Those arrangements require an annual audit by an independent auditor of the contracted service provider's control procedures for the resources used for processing government's mainframe computer systems. This audit is performed in accordance with CICA standards and provides reasonable, but not absolute, assurance to government that the contracted service organization has in place appropriate control procedures for those matters that are its responsibility as at the date of the audit.
- 3.34** Since the programs, processing and data for significant government systems reside at the data centre (including drivers' licensing, vehicle registration, property assessment, justice), the results of an independent control audit should be of interest to the Members of the House of Assembly. Exhibit 3.3 on page 32 is an extract from the most recent auditor's report on control procedures for the contracted services provided to government at the data centre. This audit addressed four control objectives.
- 3.35** The report identifies the control procedures in place at the time of the review to support achievement of each of the four control objectives. The report also identifies a number of significant matters that are the specific and direct responsibility of government, which are not covered by the annual review and reporting. The report identified two exceptions to the control procedures as at December 30, 2005.
- 3.36** This annual audit only relates to controls over government's mainframe computer systems, not the government's SAP systems or the Department of Health's Nova Scotia hospital Information System. The SAP systems are subject to a separate annual service audit which was reported in April 2006 (see paragraphs 3.14 to 3.24 of this chapter).
- 3.37** Effective April 1, 2007, the government will cease to use the mainframe computer and will have migrated all of the current mainframe-based systems to alternate computer platforms.

### SAP Human Resources (HR) Module

- 3.38** In March 2002, Executive Council approved funding to implement SAP's HR

module through a joint project named e-Merge, for government and school boards. The project was initially approved with a planned implementation on August 1, 2004 for school boards and October 1, 2004 for government. The original approved budget (capital and operating) for the combined project was \$5.7 million. In 2004 the combined budget was increased to \$14.4 million. Later in 2004, problems were encountered that caused implementation of the system to be delayed and the project to be split into two separate projects (one for the government and one for school boards).

- 3.39** SAP HR was implemented for the government in April 2005. The school boards' project had been put on hold pending implementation of HR for the government. In July 2005, the school boards' project was approved for completion and was renamed JEM (Joint Education Mission). Executive Council approved an additional budget (capital and operating) of \$10.1 million for the remainder of the project in 2005-06 and 2006-07. This brings the total budget approvals (capital and operating) for the two projects to \$24.5 million as of April 2006. The school boards' project was reactivated on November 1, 2005 and is scheduled for implementation in January 2007.
- 3.40** We are currently in the process of planning an audit of the SAP application controls for the HR module currently used by the government. We will once again be using contracted audit resources and plan to report the results in the December 2006 Report of the Auditor General.

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## CONCLUDING REMARKS

- 3.41** Good systems and controls can be costly, while too many or less than optimal controls can also be costly. Government's challenge is to ensure that the risks of loss or misuse are appropriately identified and that decisions made about the level of control to be in place appropriately mitigate risks on a cost-benefit basis. The goal is not more or too many controls, but rather cost-effective optimization of control against risks. As a minimum, the nature and extent of controls should be sufficient and appropriate to satisfy government's stated control objectives and thereby enable an unqualified opinion by the auditors on all of the control objectives.
- 3.42** The government has invested significant time and money in its corporate financial management and accounting systems. Recent audit results indicate that there are significant persistent fundamental control weaknesses that still need to be addressed.
- 3.43** With government's intention to implement SAP systems in the Health sector, it is essential that all basic, fundamental control considerations be adequately dealt with prior to implementation.

## Auditor's Report on Control Procedures at the SAP Competency Centre

We have examined the accompanying description of the internal control objectives provided by the SAP Customer Competency Centre ("CCC") and the control procedures designed to achieve those objectives and have performed tests of the effectiveness of those control procedures for the period from April 1, 2005 to March 31, 2006. Our examination was conducted in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances. As more fully described on pages 12 through 37, control procedures did not operate effectively during the reporting period. These related to:

- Staff terminations;
- Physical security;
- Audit logging;
- Security Policy content;
- Access to privileged accounts;
- Separation of duties;
- Change management;
- Application maintenance;
- Data backup; and
- Security administration.

In addition, as described on pages 14, 15, 18, 27, 30, 31, 35, and 36, certain control activities were not exercised during the period of the audit and therefore we were unable to test their operating effectiveness.

In our opinion, the control procedures included in the accompanying description were sufficient to meet the stated control objectives. The described control procedures were suitably designed to provide reasonable, but not absolute assurance that the control objectives described therein were achieved and, except as discussed in the previous paragraph, the control procedures operated effectively from April 1, 2005 to March 31, 2006. The description of stated internal control objectives as it relates to the SAP Customer Competency Centre and the control procedures designed to achieve those objectives, is as of March 31, 2006. Any projection of the description of internal control objectives to the future is subject to the risk that, because of change, the description may no longer portray the control procedures in existence. The potential effectiveness of specific control procedures at the CCC is subject to inherent limitations and, accordingly, errors or fraud may occur and not be detected. Furthermore, our tests of the operating effectiveness of specific controls cover the period from April 1, 2005 to March 31, 2006. The projection of any conclusions, based on our findings, to future periods is subject to the risk that changes may alter the validity of such conclusions.

Our audit focused on general environmental controls and those controls specifically related to the provision of SAP CCC services. We did not test the management controls or detailed user controls exercised by the individual end-user departments in connection with their initial implementation and on-going operation of front end data processing environments. Such controls are the responsibility of the individual end-user organizations.

This report is intended solely for the use of the management of the Province of Nova Scotia, the Office of the Auditor General, and clients served by the CCC.

Ottawa, ON, Canada  
April 7, 2006

**Service Auditor Reports on the SAP Customer Competency Centre  
Comparison of Results 2004 to 2005-06**

Exhibit 3.2

Control Areas	2004				2005-06			
	Total Control Objectives	Total Control Objectives with Noted Exceptions	Total Control Procedures	Total Control Procedures with Noted Exceptions	Total Control Objectives	Total Control Objectives with Noted Exceptions	Total Control Procedures	Total Control Procedures with Noted Exceptions
Management and Administration	5	1	16	1	5	1	16	1
Physical Access Control	4	3	30	6	2	2	15	3
Logical Access Control	4	3	20	3	4	4	20	9
Application Software Development and Maintenance	1	1	10	3	1	1	10	5
Computer Operations	3	0	8	0	3	1	8	1
Change Management	6	0	10	0	6	4	10	6
Client Services	1	1	7	1	1	1	7	1
Backup and Recovery	4	0	17	0	4	1	17	1
Technical Services	5	0	12	0	5	3	12	3
	33	9	130	14	31	18	115	30

## Auditor's Report on Control Procedures at the EDS Data Centre

We have examined the accompanying description of the stated internal control objectives of the Government of Nova Scotia ["GNS"] mainframe partition at the Halifax Service Delivery Center of EDS Canada Inc. ["HSDC"] and the control procedures designed to achieve those objectives and have performed tests of the existence of those control procedures as at December 30, 2005. Our examination was made in accordance with Canadian generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

As more fully described in the accompanying description, exceptions were noted in the following control procedures as at December 30, 2005:

### System Security and Access Control

- Only authorized EDS personnel are granted access privileges to the DNS mainframe.
- The information security administrator reviews the access privileges of EDS system users and the access rules established within the access control software periodically for reasonableness.

In our opinion, the control procedures included in the accompanying description were suitably designed to provide reasonable, but not absolute, assurance that the stated internal control objectives described therein were achieved and except as noted above, the control procedures existed as at December 30, 2005.

As we tested the existence of the control procedures only as at December 30, 2005, we do not express an opinion on whether the control procedures existed at any other time.

The description of stated internal control objectives of the GNS mainframe partition at the HSDC, and the control procedures designed to achieve those objectives is as of December 30, 2005. Any projection of that description to the future is subject to the risk that, because of change, the description may no longer portray the control procedures in existence. The potential effectiveness of specific control procedures at the HSDC is subject to inherent limitations and, accordingly, errors or fraud may occur and not be detected. Furthermore, the projection of any conclusions, based on our findings, to future periods is subject to the risk that changes may alter the validity of such conclusions.

HSDC has designed its control procedures with the assumption that certain controls will be implemented by GNS. Such complementary controls are required to achieve the stated internal control objectives.

Our audit was limited to the design and existence of information technology general controls at HSDC. We have performed no procedures to evaluate the design or existence of any of the controls in place at GNS, and accordingly we express no opinion on the design or existence of such controls. Such controls are the responsibility of GNS.

This report is intended solely for the use of GNS.

Halifax, Canada  
January 31, 2006

## DEPARTMENT OF FINANCE'S RESPONSE

Thank you for the opportunity to comment on Chapter 3, Government Systems and Controls of the June 2006 Report of the Auditor General. This chapter primarily deals with findings of two audits, the SAP Application Controls audit and the Service Audit of the Customer Competency Centre of the Department of Finance.

Your report states that findings should be of concern to management and while I can assure the readers of your report that they are, it is important not to draw conclusions without reading the complete audit report and obtaining context for the audit findings. The SAP Application Controls audit states while our SAP application modules are configured to include appropriate controls, given levels of access, one should not rely on system controls for audit purposes. The narrow scope of this review did not look at our compensating controls outside of our SAP applications. It would therefore be inappropriate to assume that internal controls within the government should not be relied upon. In fact, this audit recommends "that the OAG identify, test and evaluate compensating controls and procedures that are not reliant upon the SAP application or modules, before a control reliance approach should be taken". I point this out as I feel it is important that all controls be reviewed before a conclusion is reached and I encourage your office to implement this recommendation as soon as possible.

While it is the view of management that compensating controls already exist for some of the findings and/or our current levels of access are appropriate given our organizational format, a team led by a senior financial official has already been established to review the findings and make recommendations for change where appropriate.

The Service Audit of the Customer Competency Centre should also be given some context before making any conclusions. The Service Audit process provides the context under which the linkage between stated policy, monitoring and compliance can occur in a controlled and predictable manner. This has allowed the control framework to be established that will allow us to remediate concerns that have been noted in past reports of the Auditor General. Management views the findings with concern and is actively making changes where warranted. Over the past two years, the CIS Division within the Department of Finance has documented its policies and procedures, communicated them to staff, as well as established an extensive audit process through the Service Audit to validate the adoption of best practices.

The Audit points out specific areas that are deemed to be "significant findings". Consideration must, however, be given to what is deemed to be significant. For example, one 'significant finding' related to moisture detectors that were not in place during renovations even though it was acknowledged that air conditioning units were operational. The Department of Finance will,

however, establish a multi-division team to review the Service Audit findings and a process will be put in place to ensure the management of the Customer Competency Centre implements all required changes in a timely and effective manner.

While there is room for improvement, I support the Controller's *Statement of Responsibility for the Consolidated Financial Statements of the Province of Nova Scotia* which states that government controls provide reasonable assurance that transactions are appropriately authorized, assets are safeguarded and financial records are properly maintained.