AUDIT REPORT

NITRATE FILM PRESERVATION FACILITY

INTERNAL AUDIT FUNCTION

AUDIT AND EVALUATION DIRECTORATE

JULY 2012

TABLE OF CONTENTS

EXECUTIVE SUMMARY 3

INTRODUCTION 6

BACKGROUND 6
RISK ASSESSMENT 7
OBJECTIVE AND CRITERIA 7
SCOPE 7
METHODOLOGY 8

FINDINGS AND RECOMMENDATIONS 9

HEALTH AND SAFETY (H&S) 9
NITRATE HANDLING PROCEDURES 10
MONITORING AND REPORTING 11

APPENDIX A – MANAGEMENT ACTION PLAN 15

APPENDIX B – RISK RANKING OF RECOMMENDATIONS 18

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EXECUTIVE SUMMARY

Background

The Nitrate Film Preservation Facility Audit was part of the 2011/14 Risk-Based Audit Plan (RBAP) which was recommended for approval by the Departmental Audit Committee (DAC) and was subsequently approved by the Deputy Head in June 2011.

In June 2008, the Treasury Board of Canada Secretariat (TBS) approved funding to Library and Archives Canada (LAC) for construction of a nitrate preservation facility to safeguard Canada's cellulose nitrate-based documentary heritage. It was stipulated in the Treasury Board (TB) submission that an audit be conducted when the project was completed, and a copy of the audit report be provided to the TBS.

The nitrate facility was operational in March 2011 and a Memorandum of Understanding (MOU) was signed between LAC and the Communications Research Centre (CRC) for Campus Site Services such as facility operations and maintenance and security at the new nitrate facility. The Analogue Preservation Branch is responsible for the preservation of the collection at the nitrate facility.

The objective of the audit was to determine if the requirements outlined in the TB submission for the construction of the new cellulose nitrate facility were met. Furthermore, following the risk analysis, the audit focused on Health and Safety oversight, handling procedures for nitrate documents and physical security at the nitrate preservation centre. The main observations are identified below.

Findings and Recommendations

Health and Safety

Generally, there are no permanent employees working at the nitrate facility, however, at the time of the audit, four employees had been working full-time at the nitrate facility for approximately one year. Supervisors of the employees working at the nitrate facility were aware and acknowledged their responsibilities for the health and safety of their employees. However, a health and safety representative had not been assigned to the nitrate facility—as prescribed by the Canada Labor Code—and consequently, monitoring, investigations, inspections and other responsibilities of the health and safety representative were not performed. This included the monitoring of health and safety controls such as the functioning of eye wash and showering stations, maintenance of first-aid kits on-site, and the expiry of health and safety products.

Also, there was no information strategy in place to keep employees informed of changing health and safety requirements, issues and implications. Nor was there a process to notify the LAC occupational health and safety officer that employees would be working at the facility for an extended period of time.

It is recommended that a process be established to ensure periodic monitoring of the health and safety controls at the facility and that an information strategy be put in place to ensure that the LAC Occupational health and safety officer is kept informed when employees are working at the facility to ensure the health and safety of these employees.

Nitrate Handling Procedures

The nitrate handling procedures were also reviewed and were found to be generally consistent with The National Fire Protection Association (NFPA) 40 – Standard for the Storage and Handling of

Cellulose Nitrate Film, however the handling procedures were incomplete as the procedures did not describe the handling and disposal of scrap nitrate. There is currently no scrap nitrate produced at the facility but in the event that scrap nitrate is produced at the facility and needs to be disposed of, employees handling the scrap nitrate may not be aware of the required safety procedures to take and may expose themselves and other employees to health and safety risks.

It is recommended that the nitrate handling procedures are revised to include procedures for the handling and disposal of scrap nitrate.

Monitoring and Reporting

Monitoring and detection functions for vault temperature and humidity, physical security,water and fire detection existed throughout the nitrate facility. However, at the time of the walkthrough, the audit team observed that the controlled access to the storage areas (both acclimatization and cold-storage vaults) were not functioning, resulting in uncontrolled access to the acclimatization and cold-storage vaults. We also noted that security cameras (both inside and outside) had been removed for a period of approximately three weeks due to a system upgrade. When physical security measures at the nitrate facility are not functioning as intended or not in place, the nitrate collection may be subject to theft or damage.

It is recommended that compensating controls be implemented immediately, while the cameras are removed and access points uncontrolled.These compensating measures must be in place until the key controls are back and functioning as intended.

Monthly reporting captures temperature and humidity daily averages in the employee work areas and acclimatization and cold-storage vaults of the nitrate facility. Between June and October 2011, management was made aware of temperature and humidity fluctuations between 1°C to 9°C and 20% to 53% respectively. It was determined that a mechanical issue caused the unexpected temperature and humidity fluctuations. Measures were taken by the project management team to address the temperature and humidity fluctuations. Temperature and humidity fluctuations will have an impact on the preservation of the nitrate collection, including a more rapid decay of the collection and may increase the risk of fire.

It is recommended that the project management team overseeing the changes to the nitrate facility humidifier continue to monitor the temperature and humidity fluctuations and ensure that upon completion of the changes, cold-storage vaults are maintaining expected temperature and humidity levels.

Audit conclusion

The results of the audit indicate that the requirements outlined in the TB submission for the construction of the nitrate facility were met. However, areas for improvement were identified for:

- the health and safety of employees working at the facility;
- nitrate handling procedures;
- controls over the vault access and camera monitoring system; and
- controls of temperature and humidity for the cold-storage vaults.

Statement of Assurance

This audit engagement was planned and conducted to be in accordance with the Internal Auditing Standards for the Government of Canada.

In my professional judgment as Chief Audit Executive, sufficient and appropriate procedures have been conducted and evidence gathered to support the accuracy of the conclusions reached and contained in this report. The conclusions were based on a comparison of the situations as they existed at the time of the audit and against the audit criteria.

Sandra Lopes, CPA, CA, CIA
Chief Audit Executive
Library and Archives Canada

Acknowledgements
We wish to express our appreciation for the cooperation and assistance afforded to the internal audit team by management and staff during the course of this assurance engagement.

INTRODUCTION

BACKGROUND

As part of its mandate, Library and Archive Canada (LAC) is responsible to preserve the documentary heritage of Canada for the benefit of present and future generations. A portion of the collection includes film and photographs which were produced on cellulose nitrate-based film until the 1950s. The nitrate collection is composed of approximately 5,575 film reels and 600,000 photographs, which LAC has been storing at the Rockcliffe site[1], since 1975[2].

In March 2001, the Nitrate Film Storage Facility was given Preliminary Project Approval since the Rockcliffe facility was deemed inadequate and inappropriate for the long-term preservation of potentially volatile cellulose nitrate records. In 2003, the Auditor General issued a report noting the poor quality of facilities housing LAC collections, further supporting the ongoing need to improve the preservation of cellulose nitrate collection.

Following the results of the Auditor General's report and the Department of National Defence's decision to dispose of the Rockcliffe site, LAC and Public Works Government Services Canada (PWGSC) explored possible alternative accommodation solutions for the nitrate preservation facility.On June 5, 2008, LAC received Effective Project Approval (EPA) for the construction of a new nitrate film preservation facility in Shirley's Bay, at an estimated substantive total project cost of $17.9M (excluding GST). The Strategic Planning, Infrastructure and Operations Branch was responsible for the oversight of this project for LAC.

Construction of the new facility began in July 2009 and was completed in the fall of 2010. An issue with one of the two heating and ventilation air-conditioning units serving the storage vaults was discovered during the commissioning of the mechanical systems. This issue delayed the move of nitrate holdings until February 2011. Once the issue was resolved and the preservation environments in the storage vaults were shown to be stable, the nitrate holdings were moved to the new facility. The move took place from February 15 to February 25, 2011.The construction project was deemed a success as the project objectives were met under the approved budget. The nitrate facility was operational in March 2011. The Analogue Preservation Branch is responsible for the preservation of the collection at the nitrate facility.

A Memorandum Of Understanding (MOU) for Campus Site Services was signed between LAC and the Communications Research Centre (CRC). This MOU describes the agreement made between LAC and CRC for the provision of support services such as facility management and security at the new facility. The MOU describes the scope and general terms and conditions with respect to the delivery of, and cost recovery for, support services provided by CRC.

There have not been any previous audits on the nitrate facility. Human Resources Social Development Canada (HRSDC) Fire Prevention Services conducted a review of nitrate facilities plans and design prior to construction and performed a review/inspection of the nitrate facility following the construction phase. HRSDC deemed the nitrate facility compliant with National Fire Protection Association (NFPA) 40 – Standard for the Storage and Handling of Cellulose Nitrate Film and other applicable fire codes.

[1] Owned by the Department of National Defence until December 2005.
[2] Treasury Board Submission for the funding for construction of a nitrate preservation facility.

RISK ASSESSMENT

A risk assessment was conducted during the planning phase of the audit to ensure the audit focused on the areas of most significance. The following risks were identified:

- Roles, responsibilities and accountabilities related to health and fire safety of the nitrate facility may not be clearly defined, communicated and understood.
- Ongoing health and fire safety monitoring of the nitrate facility may not be conducted.
- Adequate planning for fire safety may not be established, communicated and understood.
- Senior management may not receive timely and accurate information related to existing or emerging preservation, health or fire safety issues.
- The nitrate facility may not comply with the minimum requirements for the accessibility of real property.
- Cellulose nitrate-based documentary heritage may be deteriorating at a more rapid rate than anticipated as a result of temperature fluctuations.

OBJECTIVE AND CRITERIA

The objective of the audit was to determine if the requirements outlined in the Treasury Board (TB) submission for the construction of the new cellulose nitrate facility were met.

The audit criteria for this engagement were:

- An effective health and safety oversight structure including defined roles and responsibilities has been established and meets the requirements of applicable regulations and standards.
- Health and safety guidance documents, training and awareness programs are in place, appropriately communicated and reflect applicable regulations and standards.
- Monitoring and reporting mechanisms are in place to help ensure health and safety measures are functioning as intended, preservation objectives are being met and arising health and safety or preservation issues are appropriately responded to.

The audit criteria were derived from the results of a preliminary risk assessment, industry standards, legislation and TB policies related to the storage of cellulose nitrate records and occupational health and safety, which are listed in the next section.

SCOPE

The audit scope focused on assessing compliance with:

- the NFPA 40 – Standard for the Storage and Handling of Cellulose Nitrate Film;
- ISO 10356 Standard – Cinematography, Storage and Handling of Nitrate-base Motion-picture Films;
- *Treasury Board Accessibility Standard for Real Property;*
- Canada Labour Code – Part II which describes health and safety roles and responsibilities for employers, employees health and safety committees and health and safety representatives;
- *Treasury Board Policy on Occupational Safety and Health;*
- *Treasury Board Standard for Fire Safety Planning and Fire Emergency Organization; and*
- *Treasury Board Fire Protection Standard.*

METHODOLOGY

The audit fieldwork was conducted in accordance with the TBS *Policy on Internal Audit*, which stipulates that the Institute of Internal Auditors' standards apply to the Public Service sector. These standards require that the audit be planned and performed in such a way as to obtain reasonable assurance that the audit objective is achieved.

The fieldwork was conducted between February and March 2012. The audit included procedures that were considered necessary to assess compliance with relevant policies and standards. The audit procedures included:

- a review of the fire safety plan and evacuation procedures, fire drill report, nitrate handling and circulation procedures, nitrate facility security protocol, LAC occupational health and safety policy, the MOU between CRC and LAC;
- a review of the process to monitor temperature and humidity of acclimatization and cold-storage vaults;
- a visit to the nitrate facility to assess the facility against fire safety and cellulose nitrate storing standards and requirements; and,
- interviews with Project Leads, management and other key personnel.

FINDINGS AND RECOMMENDATIONS

HEALTH AND SAFETY (H&S)

A health and safety representative has not been assigned to the nitrate facility and consequently, monitoring, investigations and inspections were not performed. This included the monitoring of health and safety controls such as ensuring emergency eye wash and showering stations were functioning, first-aid kits were inventoried and health and safety products were not expired.

An information strategy to keep employees informed of existing and changing health and safety requirements, issues and implications was not in place.

Roles and responsibilities related to the property management of the nitrate facility were defined through a MOU between CRC and LAC. The MOU outlined roles and responsibilities related to fire prevention and fire alarms, as well as physical security and were consistent with the *TB Fire Protection Standard* and *Standard for Fire Safety Planning and Fire Emergency Organization*. As required by the previously mentioned standards, it was observed that fire protection equipment was inspected on a regular basis. We observed that fire extinguishers were tested and monitored on a monthly basis through evidence of a signed monitoring card on each fire extinguisher.

With regards to health and safety, supervisors are responsible for the health and safety of employees. Generally, there are no permanent employees working at the nitrate facility. However, at the time of the audit, four employees had been working full-time at the nitrate facility for approximately one year on a special project. Interviews indicated that LAC Management acknowledged these health and safety responsibilities. In addition, employees working at the nitrate facility had a list of contacts to help address issues/concerns, should they arise.

According to the *Canada Labour Code Part II*, a health and safety representative is required for each workplace controlled by the employer at which fewer than 20 employees[3] are normally employed. A health and safety representative has not been assigned to the nitrate facility and consequently, monitoring, investigations and inspections were not performed. This included the monitoring of health and safety controls such as the functioning of eye wash and showering stations, maintenance of first-aid kits on-site, and the expiry of health and safety products. Without periodic monitoring of these health and safety controls and in the event of a fire or health and safety issue, controls in place may not be functioning appropriately.

Communication requirements were not in place to inform employees of existing and changing health and safety requirements, issues and implications; nor management's requirement to notify health and safety personnel, such as LAC's Occupational Health and Safety Officer, that employees will be working at the nitrate facility for an extended period of time.

The lack of defined communication requirements may result in employees not being aware of, or exposed to, new health and safety risks or fire hazards.

[3] Workplace with more then 20 employees requires a H&S committee.

Recommendation 1:

LAC should identify a H&S representative for the nitrate facility to ensure periodic monitoring of the health and safety controls.

Recommendation 2:

The Analogue Preservation Branch should develop a strategy to inform employees working at the nitrate facility of existing and changing health and safety requirements related to nitrate material; and ensure that appropriate individuals are notified if employees will be working at the nitrate facility for an extended period.

NITRATE HANDLING PROCEDURES

Employees working at the nitrate facility were trained on health and safety policies and procedures, however the nitrate handling procedures provided to the employees was incomplete as it did not describe the procedures for the disposal of scrap nitrate.

Prior to beginning work at the nitrate facility, employees were trained on health and safety related procedures and risks specific to the nitrate facility and cellulose nitrate collection items. The employees working at the nitrate facility were provided with an orientation binder that included documentation on nitrate handling procedures, nitrate circulation procedures, nitrate facility security protocols, fire safety plan and facility evacuation procedures. These were readily accessible, as required by the *TB Policy on Occupational Safety and Health*. The review noted that the evacuation procedures were completed and included:

- a description of the procedures to follow when someone discovers a fire, observes smoke or smells gas/fuel;
- a map with all emergency exits and different possible paths to get to the assembly area in case of an evacuation; and,
- the contact information of the Fire Prevention Officer of CRC, in case a person has further questions.

Our review of the fire safety plan and nitrate handling procedures noted that:

- a fire safety plan was stored at the nitrate facility and accessible to all employees working at the facility;
- the fire safety plan was signed by Ottawa Fire Services and the Fire Prevention Officer of CRC;
- key requirements of the TB Fire Protection Standard and Standard for Fire Safety Planning and Fire Emergency Organization were covered in the plan; and
- nitrate handling procedures were available, such as:
  - the storing, acclimatizing and handling of nitrate;
  - fire hazards and health risks associated with the handling of nitrate;

- a limit for the quantity of nitrate film which can be stored on one shelf for audio-visual film and still photographic film, consistent with the NFPA 40 Standard. It also sets weight identification labels to easily determine visually the amount of nitrate housed in a container; and
- the laws related to transportation of dangerous goods and the limited quantities exception for which LAC qualifies. Guidelines were given on how to properly label nitrate as per the *Transportation of Dangerous Goods Act*.

Through our review of the training material and interviews with employees working at the nitrate facility, awareness of the health and safety risks including fire safety and fire-evacuation procedures were apparent. This was further noted through a fire drill that was undertaken by CRC's Fire Prevention Officer in June 2011. In addition, commissionaires employed by CRC to monitor the physical security of the campus were also trained.

Although the nitrate handling procedures were consistent with the NFPA 40 – Standard, the document was incomplete as it did not describe the procedures for the handling and disposal of scrap nitrate, as outlined in chapter 7 of the NFPA 40 – Standard. Interviews indicated that scrap nitrate is not currently being produced at the nitrate facility. In the event that scrap nitrate is produced at the facility and needs to be disposed of, employees handling the scrap nitrate may not be aware of the required safety procedures to take and may expose themselves and other employees to health and safety risks.

Recommendation 3:

The Analogue Preservation Branch should ensure that the nitrate handling procedures are complete, and include procedures for the handling and disposal of scrap nitrate.

MONITORING AND REPORTING

Physical Security

Security cameras were not in place for an extended period of time and controlled access to the storage vaults was not functional at the time of the audit walkthrough.

The TB *Accessibility Standard for Real Property* outlines minimum requirements for accessibility of real property, which includes facilities such as the nitrate facility. Based on our review procedures, the nitrate facility is compliant with the TB *Accessibility Standard for Real* Property. The nitrate facility was assessed against the requirements of the standard.

The NFPA 40 – Standard for the Storage and Handling of Cellulose Nitrate Film outlines minimum safety requirements which include the storage and handling of cellulose nitrate-based film. A review of the nitrate facility was conducted by HRSDC Fire Prevention Services during the design phase and at the completion of the construction phase, at which point they confirmed the nitrate facility was compliant with the NFPA 40 – Standard.

Our audit focused on specific chapters of the NFPA 40 – Standard related to nitrate:

- Chapters 6 – Storage of nitrate film;
- Chapter 7 – Handling of nitrate film;

- Chapter 8 – Motion picture projection and special processes; and,
- Chapter 9 – Special occupancies.

During the fieldwork phase of the audit, the audit team observed:

- nitrate motion picture films were maintained in closed individual metal cans;
- photos were maintained in individual sleeves of approved boxes;
- nitrate was not placed or kept under benches, tables or other surfaces that would shield it from sprinkler discharge;
- the total quantity of nitrate film outside of storage did not exceed the maximum threshold; and
- scrap nitrate was not produced or disposed of.

It was also observed that water and fire detection devices, including fire alarms and smoke detectors, existed throughout the facility. The audit procedures also included a review of the physical security of the facility. Physical security of the building is monitored by commissionaires employed by CRC. Commissionaires completed regular drive-by patrols of the facility during the daytime and regular walkthroughs of the facility during the nighttime. Access to the facility are controlled by passes and monitored by CRC whereby electronic passes were required to access the nitrate facility, employee working area, electrical room, mechanical room, vault area and cold-storage area.

At the time of the audit, we observed:

- the controlled access to the storage areas (both acclimatization and cold-storage vaults) was not functioning, resulting in uncontrolled access to the acclimatization and cold-storage vaults; and
- security cameras (both inside and outside) had been removed for a period of approximately three weeks due to a system upgrade.

When physical security measures at the nitrate facility are not functioning as intended or not in place, the nitrate collection may be subject to theft or damage.

Recommendation 4:

LAC's Security officer should ensure that compensating measures be implemented immediately at the nitrate facility, while cameras are removed and controlled access is not functioning, and kept until these controls are back and functioning as intended.

Temperature and Humidity Fluctuations

The cooling system for the cold-storage vaults was not operating as intended, resulting in temperature and humidity fluctuations. Temperature and humidity fluctuations will have an impact on the preservation of the nitrate collection, including a more rapid decay of the collection and may increase the risk of fire.

To ensure that preservation and fire safety objectives were met, a review of the monitoring of issues, specifically temperature and humidity fluctuations was conducted. The industry standards used to assess existing temperature and humidity included:

- NFPA 40 – Standard for the Storage and Handling of Cellulose Nitrate Film;
- ISO 10356 – Standard for cinematography storage and handling of nitrate-base motion picture film; and,
- Image Permanence Institute (IPI) Quick Reference for Media Storage.

The table below provides an overview of the different temperature and relative humidity levels for storing cellulose nitrate products by industry standard:

Industry Fire Safety Standards and Preservation Guidelines for Nitrate					
Standard	Preservation	Fire Safety	Relative Humidity	Temperature	Notes
NFPA 40		X	N/A	21°C or less	
ISO 10356	X		20%-30%	2°C max	
IPI	X		30% - 50%	12°C	Satisfactory for extended periods
				4°C	Comparable to ISO standards
				0°C	Will provide extended lifetime preservation

LAC determined that they would adhere to the NFPA 40 and ISO standards which prescribe 2°C temperature and relative humidity of 20%–30%.

Through interviews with key personnel, it was determined that the temperatures and relative humidity of cold-storage vaults and work areas were monitored by CRC and LAC. The CRC security desk was informed when the temperature of the cold-storage vaults exceeded 2°C by an alarm system that monitors temperature fluctuation. A process exist to inform LAC when temperature en humidity fluctuations occur over the accepted standards. Between June and October 2011, the nitrate facility experienced temperature and humidity fluctuations due to mechanical issues with the cooling system. The issues with the cooling system resulted in temperature and humidity fluctuations between 1°C to 9°C and 20% to 53% respectively. Throughout the period, different solutions were eximaned and put in place to resolve the issue.

It was determined that a mechanical issue caused the unexpected temperature and humidity fluctuations in the summer months (June to October). In November 2011, measures were taken by the project management team to permanently address the temperature and humidity fluctuations whereby an independent contractor was hired to undertake corrective measures on the mechanical system at an additional cost of $111,000. The project management team overseeing the repair of the cooling system should continue to monitor the temperature and humidity fluctuations and ensure that upon completion of the repairs, cold-storage vaults maintain expected temperature and humidity levels, including during the summer months. Similar to the issues at the previous Rockcliffe facility which was deemed inadequate and inappropriate for the long-term preservation of cellulose nitrate records, temperature and humidity fluctuations will have an impact on the preservation of the nitrate collection, including a more rapid decay of the collection and may increase the risk of fire.
Although the fluctuations reached as much as seven degrees higher than the set temperature for the nitrate facility cooling system, the maximum ideal temperature that could be reached and still meet preservation objectives is 12°C. According to the Image Permanence Institute, 12°C is a satisfactory temperature for the preservation of nitrate film for extended periods.

Recommendation 5:

The project management team overseeing the repair of the cooling system should monitor the temperature and humidity fluctuations and ensure that upon completion of the repairs, cold-storage vaults maintain expected temperature and humidity levels throughout the year.

APPENDIX A – MANAGEMENT ACTION PLAN

Internal Audit Recommendations	Management Response to the Recommendation	Action(s) to be taken	Estimated Comple-tion Date	Responsibility
Recommendation – This colum represents the exact wording from the audit report. The recommendations are final and should not be modified.	Indicate if you agree with the recommendation or disagree and accept the risk.	Provide a high-level description of the action(s) to be taken.	Provide an estimated date of completion for each action.	Provide the position of the person having the appropriate level of authority to implement the recommendation.
1. LAC should identify a Health and Safety representative for the Nitrate facility to ensure periodic monitoring of the health and safety controls.	Management agrees with the recommendation.	A workplace Health and Safety representative has been named for NFPF as of April 1, 2012. A system has been established to capture and ensure monitoring of health and safely controls.	Completed	Director General Analogue Preservation Branch

Internal Audit Recommendations	Management Response to the Recommendation	Action(s) to be taken	Estimated Comple-tion Date	Responsibility
2. The Analogue Preservation Branch should develop a strategy to inform employees working at the nitrate facility of existing and changing health and safety requirements related to nitrate material; and ensure that appropriate individuals are notified if employees will be working at the nitrate facility for an extended period.	Management agrees with the recommendation.	The manual for the care and handling of nitrate material at NFPF will be updated to reflect changing health and safety requirements as they relate to nitrate collection holdings at NFPF. A copy of the manual will be made available on-site and a training session will be delivered to all new staff working on-site. The NFPF workplace OHS representative will be responsible for updating the manual. A system to inform appropriate individuals if employees are working for extended periods of time at NFPF will be developed and communicated.	October 1, 2012	Director General Analogue Preservation Branch
3. The Analogue Preservation Branch should ensure that the nitrate handling procedures are complete, and include procedures for the handling and disposal of scrap nitrate.	Management agrees with the recommendation.	Handling and disposal procedures are in the process of being updated to reflect NFPA 40 compliant internal practice.	October 1, 2012	Director General Analogue Preservation Branch

Internal Audit Recommendations	Management Response to the Recommendation	Action(s) to be taken	Estimated Comple-tion Date	Responsibility
4. LAC's Security officer should ensure that compensating measures be implemented immediately at the nitrate facility, while cameras are removed and controlled access is not functioning, and kept until these controls are back and functioning as intended.	Management agrees with the recommendation and will ensure compliance and implementation as recommended.	All cameras have been replaced with new fully functioning high-definition cameras, and the malfunctioning door lock has been repaired.	Completed March 30, 2012	DG Strategic Planning, Infrastructures and Operations Branch
5. The project management team overseeing the repair of the cooling system should monitor the temperature and humidity fluctuations and ensure that upon completion of the repairs, cold-storage vaults maintain expected temperature and humidity levels throughout the year.	Agree. Vault environments have been within tolerances since the fall of 2011. The work undertaken to modify the mechanical system seeks to ensure that vault temperatures do not rise above tolerances during the summer season. The corrective measures taken include modifications to the mechanical system to help prevent future mechanical issues, and increasing the capacity of the system to help in maintaining the required environments.	Complete the repair of the cooling system. Continue with monitoring, paying special attention to high- peak summer days.	May 31, 2012. On-going	DG Strategic Planning, Infrastructures and Operations Branch

APPENDIX B – RISK RANKING OF RECOMMENDATIONS

The following table presents recommendations and assigns risk rankings of high, moderate or low. Risk rankings were determined based on the relative priorities of the recommendations and the extent to which the recommendations indicate non-compliance with Treasury Board policies and other relevant policies and standards.

Recommendations	Priority Level
1. LAC should identify a Health and Safety representative for the nitrate facility to ensure periodic monitoring of the health and safety controls.	Moderate
2. The Analogue Preservation Branch should develop a strategy to inform employees working at the nitrate facility of existing and changing health and safety requirements related to nitrate material; and ensure that appropriate individuals are notified if employees will be working at the nitrate facility for an extended period.	Moderate
3. The Analogue Preservation Branch should ensure that the nitrate handling procedures are complete, and include procedures for the handling and disposal of scrap nitrate.	Low
4. LAC's Security officer should ensure that compensating measures be implemented immediately at the nitrate facility, while cameras are removed and controlled access is not functioning, and kept until these controls are back and functioning as intended.	Moderate
5. The project management team overseeing the repair of the cooling system should monitor the temperature and humidity fluctuations and ensure that upon completion of the repairs, cold-storage vaults maintain expected temperature and humidity levels throughout the year.	Moderate