



Transport  
Canada

Transports  
Canada

**EMS Pilot Project**  
TRANSPORT CANADA  
AIRCRAFT SERVICES  
DIRECTORATE



**Visit the EMS *Info* web site at:  
[www.ec.gc.ca/emsinfo](http://www.ec.gc.ca/emsinfo)**

**Consultez le site Internet de l'*Info* SGE à l'adresse suivante :  
[www.ec.gc.ca/infosge](http://www.ec.gc.ca/infosge)**

# **EMS Pilot Project Report**

## **Transport Canada Aircraft Services Directorate**

**October 2000**



# Table of Contents

## Aircraft Services Directorate Environmental Management System

1. *Initial Environmental Review*

2. *Procedures Manual*

3. *Directives Manual*

4. *Operational Control Manual*

5. *Case Study*

Aircraft Services Directorate  
Environmental Management System  
Initial Environmental Review

June 15, 1999  
Version 1.1

**This page was intentionally left blank.**

# Table of Contents

<b>1.0 INTRODUCTION</b>	<b>1</b>
1.1 EMS Development and Associated Benefits	1
1.2 Transport Canada's Environmental Management System	2
1.3 EMS at Aircraft Services - Initial Environmental Review (IER)	2
<b>2.0 METHODOLOGY</b>	<b>3</b>
2.1 ISO 14001 Standard EMS Requirements	3
2.2 ISO 14004 IER Guidelines, Techniques, and Tools	4
2.3 Resources Used and Schedule for IER Preparation	4
2.4 Limitations	5
<b>3.0 FACILITY DESCRIPTION</b>	<b>6</b>
3.1 Description and Operations of Building T-58	6
3.2 Description and Operations of Building O-276	7
3.3 Physical and Organizational Scope of IER and EMS	7
<b>4.0 LEGAL AND OTHER REQUIREMENTS</b>	<b>9</b>
4.1 Federal Legislation and Regulations	9
4.2 Other Requirements	9
4.2.1 Provincial Legislation and Regulations	10
4.2.2 Municipal Legislation and Regulations	10
4.2.3 Relevant Internal and External Criteria, Standards, Guidelines, and Codes of Practice	10
4.2.3.1 Internal Criteria	11
4.2.3.2 External Criteria	13
<b>5.0 ASPECT IDENTIFICATION</b>	<b>14</b>
5.1 Air Emissions	15
5.2 Noise Emissions	16
5.3 Water Quality	16

<b>5.4 Waste Management</b>	17
5.4.1 Hazardous Waste	17
5.4.2 Non-Hazardous Waste	17
<b>5.5 Resource Use</b>	17
<b>5.6 Hazardous Materials Management</b>	17
<b>5.7 Emergency Response Plan</b>	18
<b>5.8 Land Management</b>	19
<b>5.9 Administration</b>	19
5.10 Identification of Environmental Aspects by Area	19
<b>6.0 EXISTING PRACTICES AND PROCEDURES</b>	<b>21</b>
6.1 Management Practices and Procedures	21
6.2 Procurement and Contracting Practices and Procedures	22
6.3 Emergency Response Practices and Procedures	23
6.4 Employee Awareness and Training Practices and Procedures	23
<b>7.0 INCIDENTS, OPPORTUNITIES AND INTERESTED PARTIES</b>	<b>24</b>
7.1 Previous Incidents and Non-Compliance	24
7.2 Opportunities for Competitive Advantage	24
7.3 Interested Parties	25
<b>8.0 GAP ANALYSIS AGAINST THE ISO 14001 AND 14004 STANDARDS</b>	<b>27</b>
<b>APPENDIX A INITIAL ENVIRONMENTAL REVIEW SUPPORT RESOURCES A1</b>	
Environmental Aspects at ASD.....	A2
Site Review Checklist.....	A6
IER Review.....	A7

**APPENDIX B FEDERAL AND PROVINCIAL LEGISLATION AND REGULATIONS.....B1**

**Federal Legislation and Regulations.....B2**

**Provincial Legislation and Regulations.....B4**

**APPENDIX C ENVIRONMENTAL ASPECT IDENTIFICATION TABLE.....C1**

**APPENDIX D MAPS.....D1**

**T-58 First Floor.....D2**

**T-58 Second Floor.....D3**

**T-58 Third Floor.....D4**

**O-276 First Floor.....D5**

**ASD & Ottawa Airport.....D6**

This page was intentionally left blank.

## 1.0 INTRODUCTION

This document is the initial environmental review (IER) for the Aircraft Services Directorate (ASD), located at 58 Service Road, Gloucester, Ontario. The IER introduces the concept of an environmental management system (EMS) as defined by the ISO 14001 standard and Transport Canada's (TC) departmental EMS. Included in this section are benefits associated with adopting an EMS and the progress to date of the EMS development at ASD.

### 1.1 EMS DEVELOPMENT AND ASSOCIATED BENEFITS

Concerns for the environment, human health and safety and compliance with regulatory requirements have led organizations to expand their attention to the potential environmental impacts of their activities, products and services. It has become more difficult to comply with the increasing number and complexity of new environmental regulations from all levels of government. Management of environmental impacts is now, more than ever, both a financial and moral concern.

The International Organization for Standardization (ISO) 14001 Standard, *Environmental management systems - Specifications with guidance for use* defines an EMS as:

“the part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy.”

The design of an EMS is an ongoing, interactive process that consists of defining, documenting and continually improving the required capabilities (ISO 14004 Standard, *Environmental management systems - General guidelines on principles, systems, and supporting techniques*).

Implementing an EMS can result in both environmental and business benefits. Other potential benefits include:

- insurance of ongoing compliance with environmental legislation and regulations;
- reduction in or elimination of environmental incidents and noncompliance;
- help in demonstrating due diligence;
- illustration to stakeholders and shareholders that a leading-edge management system is being used;
- identification of cost-saving opportunities through conservation of resources and reduced waste management costs;
- improvement in relations with government agencies, Environmental Non-Government Organizations (ENGOs), and Canadian Airports Council (CAC);
- obtaining financial agency approval and reduced insurance premiums; and
- improvement in internal and external relations.

## **1.2 TRANSPORT CANADA'S ENVIRONMENTAL MANAGEMENT SYSTEM**

In 1998, under direction from federal government policy, TC committed to the development of an EMS based on the ISO 14000 standards and the federal government policy "A Guide to Green Government". TC developed an EMS and is committed to implementing environmental management throughout the department. This process is fundamental for the integration of environmental considerations into daily decision-making and to meeting the objectives of sustainable development as detailed in the departmental *Sustainable Development Strategy (SDS)*. The goal of the EMS is to produce a departmental framework, continually monitored and periodically reviewed, and to provide direction to the department's environmental activities.

TC's Environmental Policy is as follows:

Transport Canada is committed to making sustainable development a fundamental principle of policy development, transportation safety regulation and program delivery, and to ensuring that all of its operations are conducted in an environmentally responsible manner.

As TC shifts from an operational department to that of a landlord and regulator, remaining business centres will be responsible to meet the requirements of a departmental EMS.

## **1.3 EMS AT AIRCRAFT SERVICES - INITIAL ENVIRONMENTAL REVIEW (IER)**

The objective of this project is to implement an EMS following the procedures outlined in the ISO 14001 and 14004 standards. Using the departmental EMS as a benchmark, ASD is developing an EMS which conforms with the departmental framework for environmental management.

On November 4, 1998, management at ASD committed to the development of an EMS.

The purpose of this IER is to provide a detailed report outlining the position of the facility with regard to the environment. Opportunities for EMS development are identified and included in this document. The methodology used for conducting the IER can be found in Section 2.2. The following document outlines the process and results of the IER.

## 2.0 METHODOLOGY

The methodology used for developing an EMS at ASD follows the requirements specified in the ISO Standard 14001, *Environmental Management Systems - Specification with guidance for use* and the ISO Standard 14004, *Environmental Management Systems - General guidelines on principles, systems, and supporting techniques*. The following sections outline the ISO Standard 14001 EMS requirements, the process used to conduct the initial environmental review (IER) as stated in the ISO Standard 14004, and the schedule and other resources used for the preparation of the IER.

### 2.1 ISO 14001 STANDARD EMS REQUIREMENTS

The requirements of the ISO 14001 EMS are the following:

Development of an environmental policy

#### Planning

- identification of environmental aspects;
- identification of legal and other requirements;
- establishment of objectives and targets; and
- development of environmental management programs.

#### Implementation and operation

- establishment of structure and responsibility;
- development of training programs, environmental awareness, and competence with legal and other requirements;
- establishment of internal and external communication with regard to environmental aspects and the EMS;
- establishment of EMS documentation in paper or electronic form;
- establishment and maintenance of document control in regards to the EMS;
- development of documented procedures in regards to the identified operations and activities that are associated with the identified significant environmental aspects, in line with the environmental policy, objectives and targets, and operational control; and
- establishment and maintenance of emergency preparedness and response procedures.

#### Checking and corrective action

- establish and maintain documented procedures for the monitoring and measurement of key characteristics of operations and activities that can have significant impacts on the environment;
- establish and maintain documented procedures for periodically evaluating compliance with relevant environmental legislation and regulations;

- establish and maintain procedures for defining responsibility and authority for handling and investigating non-conformance and for initiating and completing corrective and preventive action;
- establish and maintain procedures for the identification, maintenance and disposition of environmental records; and
- establish and maintain programs and procedures for periodic EMS audits.

#### Management review

- top management shall review the EMS, to ensure its continuing suitability, adequacy and effectiveness.

## 2.2 ISO 14004 IER GUIDELINES, TECHNIQUES, AND TOOLS

ISO 14004 includes guidelines for the development of an IER. Specifically, ISO 14004 (4.1.3) states that the following tools and techniques should be used.

- identification of legislative requirements;
- identification of environmental aspects of activities, products, and services so as to determine the ones that have or can have significant environmental impacts and liabilities;
- evaluation of performance compared with relevant internal criteria, external standards, regulations, codes of practice, and sets of principles and guidelines;
- existing environmental management practices and procedures;
- identification of existing policies and procedures for dealing with procurement and contracting activities;
- feedback from the investigation of previous incidents of non-compliance;
- opportunities for competitive advantage;
- views of interested parties; and
- functions or activities of other organizational systems that can enable or impede environmental performance.

All of the above suggested practices were completed when conducting the IER, and they have been documented and included in this report. When developing the IER, the consultant also considered the full range of operating conditions at ASD including possible incidents and emergency situations. Opportunities for EMS development have been identified and are included in Section 8.0 - Gap Analysis (ISO 14004).

## 2.3 RESOURCES USED AND SCHEDULE FOR IER PREPARATION

EMS Consultant, Ryan Clark, has been working on site with the Facilities, Environment and Site Safety Division since November 9th, 1998. The on site work carried out for the initial environmental review was completed by January 10th, 1999.

The following tools were used to help complete the IER:

- questionnaires for EMS Task Group;
- interviews with key employees from each branch at the pilot project facility;
- checklists based on the ISO 14004 standard;
- direct inspection of each room in both buildings (T-58 and O-276);
- review of documents produced by the Facility, Environment and Site Safety Division;
- interviews with environmental officers at the provincial and municipal level;
- interviews with private sector ISO 14001 registered organizations;
- interviews with former employees of ASD;
- federal publications;
- university library text books and other reference material detailing ISO 14000 and EMS development; and
- review of past audits and baseline studies performed at the facilities.

Copies of the questionnaires and checklists used can be found in **Appendix A**.

## **2.4 LIMITATIONS**

The main limitation associated with developing an EMS at ASD is expected to be the lack of personnel available to carry out the responsibilities inherent in maintaining ISO compliance. In the past ASD had a very effective Dangerous Goods Program which included a staff of approximately seven people and the funding needed to develop and implement a superior environmental management program. These resources no longer exist at the ASD.

Another major limitation has been the state of paper documentation and historical records. Organizing relevant existing documentation proved to be a time consuming task. The filing system for environmental records and past codes of practice have become dated and are no longer practiced.

It is a testament to the Facilities, Environment and Site Safety division that some of the old codes of practice are still being used. The manager of Environmental Protection and one new environmental student every four months, have done a particularly good job managing ASD's primary source of environmental concern, hazardous waste. The majority of their efforts must be concentrated on this area alone, leaving other areas of environmental concern unattended for extended periods of time.

## **3.0 FACILITY DESCRIPTION**

Two buildings and the surrounding area are included in this project. Building T-58 houses an aircraft hangar, workshops and administrative offices, and building O-276 the training centre. The following sections provide a detailed summary of the two buildings and the scope of the project.

### **3.1 DESCRIPTION AND OPERATIONS OF BUILDING T-58**

ASD provides aircraft maintenance and support services to TC as well as other federal government departments and agencies. This includes the provision of professional training for TC and Transportation Safety Board pilots plus facility aircraft maintenance engineers and electronics technicians.

ASD is comprised of the following branches:

- Flight Operations Branch
- Technical Services Branch
- Training Branch
- Engineering Branch
- Client and Internal Services Branch
- Aviation Safety Division

The facility's hangar at the airport is the administrative and operational headquarters for ASD regional bases. It accommodates approximately 220 employees and fifteen permanently based aircraft plus aircraft in from regions for overhauls. The hangar includes the following operational areas:

- flight operations/dispatch office;
- parts warehouse;
- avionics electrical maintenance;
- instrument and electrical shops;
- component overhaul shop;
- tire shop;
- technical library and records office;
- machine and hydraulic shops;
- paint shop;
- carpentry shop;
- battery shop;
- upholstery shops; and
- non-destructive testing shop.

It also includes administration areas for:

- senior management;
- inspection;
- finance;
- planning;
- purchasing;
- personnel;
- facilities;
- informatics;
- environmental management and protection;
- occupational health and safety;
- security;
- central records; and
- inventory management.

### **3.2 DESCRIPTION AND OPERATIONS OF BUILDING O-276**

The ASD training centre is located in close proximity to the hangar. The training centre conducts courses for TC's civil aviation inspectors, other client pilots, aircraft maintenance engineers, and avionics and electronic technicians. The facility, which opened in 1991, includes four classrooms, administration offices, a boardroom, a library, a staff/student lounge and a large bay which houses two flight simulators. The flight simulators are a Cessna Citation II full flight simulator and a King Air aircraft simulator. The training centre staff also develops training calendars, technical manuals, computer based course material and course presentation packages with multi-media equipment such as graphics design equipment, computers, VCRs, monitors, cameras and colour photocopiers.

### **3.3 PHYSICAL AND ORGANIZATIONAL SCOPE OF IER AND EMS**

The scope of the IER and EMS includes all buildings, structures and land contained on ASD's property and the activities performed there. These activities include any and all operations performed by facility employees and contractors on facility property.

The facility is divided into two separate buildings: 1) Building T-58, which houses an aircraft hangar and maintenance workshops as well as administrative offices; and 2) Building O-276, the training centre, contains two aircraft simulators and four classrooms. There is a hydraulic pump house located behind Building O-276 which houses mechanical equipment required for the simulators. The area outside the buildings includes: the apron behind of the hangar; a helicopter landing pad off the east end of the hangar; and a large lot for employees to park their cars. There are two separate hazardous waste storage sheds stationed outside the hangar as well. A Hazardous Materials Storage Building is located on the east side of Building T-58 near the helicopter landing pad, and another behind the

hangar on the south-west corner. There are three storage sheds located beside the second hazardous waste storage shed. These sheds are used by ASD central stores for storing petroleum, oil, and lubricant products. There is also a third building used primarily for storage and is no longer in everyday use.

## 4.0 LEGAL AND OTHER REQUIREMENTS

The minimum requirement of an ISO 14001 EMS is legislative and regulatory compliance. Therefore, it is very important for an organization to have an organized and current list of these requirements. Equally important is the method used to identify these legal requirements and the process in place for keeping these requirements up to date.

Below is a list of federal, provincial and municipal legislative and other regulatory requirements which apply to ASD. Also included in this section are requirements for Certificates of Approval (CA), relevant internal and external criteria, standards, guidelines, and codes of practice.

### 4.1 FEDERAL LEGISLATION AND REGULATIONS

The *Canadian Environmental Protection Act* (CEPA) (R.S.C. 1985, c. 16) is an encompassing legislation that includes most federal regulations that apply to the environment. A consolidated list of all federal legislation and regulations which apply to ASD can be found in **Appendix B**. The legislation and regulations are divided into the nine environmental categories used to identify the environmental aspects (see **Table 1**, page 12 - 13). These categories are:

- Air Emissions;
- Noise Emissions;
- Water Quality;
- Waste Management;
- Resource Use;
- Hazardous Materials Management;
- Emergency Response Plan;
- Land Management; and
- Administration.

The process followed by ASD's Manager of Facilities Engineering with respect to the acquisition of CAs, for construction or similar undertaking, is done as outlined in the National Building Code. Approvals of local authorities such as the Airports Authority, NCC, Hydro, Fire Commissioners, etc. are also required.

### 4.2 OTHER REQUIREMENTS

The following section describes the "other requirements" to which ASD subscribes. In the case of ASD "other requirements" include; provincial and municipal legislation and regulations, and different internal and external criteria.

#### **4.2.1 PROVINCIAL LEGISLATION AND REGULATIONS**

The *Environmental Protection Act* (EPA) (R.S.O. 1990, c. E-19) and the *Environmental Bill of Rights* (EBR), 1993, are encompassing legislation's that include the provincial regulations that apply to the environment. A consolidated list all provincial legislation and regulations which apply to ASD can be found in **Appendix B**. The legislation and regulations are divided into the nine environmental categories used to identify the environmental aspects (see **Table 1**, page 12 - 13). These categories are:

- Air Emissions;
- Noise Emissions;
- Water Quality;
- Waste Management;
- Resource Use;
- Hazardous Materials Management;
- Emergency Response Plan;
- Land Management; and
- Administration.

The process followed by ASD's Manager of Facilities Engineering with respects to the acquisition of a Certificate of Approval, for any form of construction or undertaking, is done as per outlined in the Provincial Building Code.

Both the small confined paint shop and the larger, curtain contained paint shop located on the hangar floor, meet provincial air emissions regulations and have been certified. The filter system in the paint shop in maintained by PWGSC.

The fuel exhaust system located at the west end of the hangar, meets provincial air emissions regulations and has been certified.

All boilers located in the two facilities are maintained by PWGSC. They all run on natural gas, meet provincial boiler emission regulations and have been certified.

#### **4.2.2 MUNICIPAL LEGISLATION AND REGULATIONS**

The Regional Municipality of Ottawa-Carleton (RMOC) and City of Gloucester Regional Regulatory Codes (RRC) contain all municipal by-laws pertaining to the environment. Sections of the Codes that are applicable to the pilot project facility include Part 5.2 of the City of Ottawa-Carleton Regional Regulatory Code, Industrial Waste Section, and Sewer-Use by-law. This section outlines the requirements pertaining to hazardous waste and the associated regulated processes. Other applicable requirements can be found in the RRC's.

#### **4.2.3 RELEVANT INTERNAL AND EXTERNAL CRITERIA, STANDARDS, GUIDELINES, AND CODES OF PRACTICE**

The following section lists environmentally related policies, directives, guidelines, and codes of practice to which ASD adheres. These documents are separated into those which

have been developed and apply strictly to ASD(internal criteria) and those which have been developed by TC or an outside organization (external criteria).

#### **4.2.3.1 Internal Criteria**

Internal criteria refers to any policies, directives, standards or codes of practice which have been developed specifically by ASD for their operations. Some of these documents are outdated and are no longer actively practiced at ASD. Any outdated documents included here are useful, in that they meet the requirements for EMS documentation. They are listed here for reference purposes, with hopes of possibly having them reinstated at a later date. These criteria include the following:

##### **Hazardous Materials Policy**

- outlines applicable regulations, responsibilities of employees, definition and classification of waste, use of registered or licensed disposal agencies, transportation, labeling, training, and emergency response plans; and
- the hazardous materials policy is outdated and requires revision.

##### **ASD Workplace Hazardous Materials Information System (WHMIS)**

- lists responsibilities of employees, managers and supervisors, and the manager of the Dangerous Goods Program responsibilities; and
- includes guidelines for purchasing, receiving and handling, disposal, labeling, MSDS's, training and related regulations.

##### **ASD Dangerous Goods Program (DGP) and Environmental Assessment Register (EAR)**

- documents work, construction, or other alterations done within the pilot project facility which requires an environmental assessment (EA).

##### **Welding Policy**

- outlines Health and Safety procedures;
- the procedures for welding are documented; and
- can be used to help identify significance of any environmental aspects associated with welding operations.

##### **Storage and Carriage of Firearms Policy**

- includes policies for handling, transporting and storing survival weapons used in Aircraft Services operations.

##### **Aircraft De-icing/Anti-icing Policy**

- shown in the pilot project facilities Policies and Procedures Manual, Part 8.7; and
- defines contractual requirements and the responsibilities of personnel involved in de-icing/anti-icing activities with the pilot project facility.

##### **Procurement of New Chemical Products Policy**

- ensures that purchases of new chemical products are routed through the Manager, Dangerous Goods Program;
- encourages the substitution of less hazardous or biodegradable products where possible; and
- was an ASD policy in the early 1990's, but is not currently enforced.

#### Dangerous Goods, Hazardous Materials and Environmental Permits of Licenses Directive

- details procedures for applications for Dangerous Goods, Hazardous Materials and Environmental permits or licenses, including renewals, and processing procedures for the Dangerous Goods Program Office.

#### Certificate of Personnel to Handle Offer for Transport or Transport of Dangerous Goods Directive

- lists all authorized individuals who may handle, offer for transport, and transport Dangerous Goods on behalf of the pilot project facility; and
- is outdated and revisions required.

#### Federal Environmental Assessment Process Directive

- pilot project facility paying notice to the new EA process and outlining how the Dangerous Goods Program will be responsible for establishing procedures for the facility.

#### Purchase, Storage, Use and Disposal of Radioactive Material Directive

- outlines roles and responsibilities for the purchase, storage, use and disposal of radioactive materials;
- is outdated and should be revised.

#### Halon Discharge Directive

- supports the Montreal Protocol and the 100% reduction of all ozone depleting substances by the year 2000;
- does not apply to fire extinguishers on aircraft.

#### Paper Save / Recycling Program

- recycling program present at the pilot project facility diverts paper, cans, bottles, batteries and other forms of recyclable waste from the regular waste stream;
- program was established as part of the "Greening of Government" initiative;
- Facilities, Environment and Site Safety group are responsible for managing program;
- cafeteria in building T-58 has a recycling centre which separates food waste from the regular waste stream;
- cardboard is recycled through the pilot project facilities central stores division; and

- in the workshops, where ever possible, chemicals are recycled as much as they can be before they are sent for disposal.

#### **4.2.3.2 External Criteria**

External criteria refers to any policies, directives, standards or codes of practice which have been developed outside of ASD. Suggested practices developed by TC and other federal departments make up the whole of this section. None of the following list are presently practiced at ASD. They are included here for reference and future EMS development purposes.

##### **Toxic Substances Management Policy**

- is a federal government initiative which could be adopted by the pilot project facility.

##### **Airport Environmental Emergency Manual**

- is a TC initiative which could be adopted by ASD.

##### **Airport Waste Management Manual**

- is a TC initiative which could be adopted by ASD.

##### **Airport Water Quality Manual**

- is a TC initiative which could be adopted by the ASD.

##### **Airport Air Quality Manual**

- is a TC initiative which could be adopted by the ASD.

## 5.0 ASPECT IDENTIFICATION

Environmental aspects are elements of an organization's activity, product or service which can have a beneficial or adverse impact on the environment (ISO 14001). For the ASD hangar and training centre, this may include discharges or releases, consumption of raw materials, or generation of hazardous waste.

**Table 1** lists the environmental aspects in nine major categories that apply to the ASD hangar and training centre. The categories for the facility are consistent with those contained in TC's departmental EMS. Any new aspects which are not indicated in TC's departmental EMS are written in *italics*. One new category, Administration, has been added to TC's eight major categories.

The details of all aspects and the physical areas to which they relate are listed in **Appendix C**.

**TABLE 1: ENVIRONMENTAL ASPECTS AT THE ASD**

Category	Environmental Aspect
Air Emissions	<ol style="list-style-type: none"> <li>1. Painting operations</li> <li>2. Aircraft</li> <li>3. Ground vehicles/equipment</li> <li>4. <i>Fumes from chemicals</i></li> <li>5. <i>Particulate matter (PM)</i></li> </ol>
Noise Emissions	<ol style="list-style-type: none"> <li>6. Aircraft</li> <li>7. Construction sites</li> </ol>
Water Quality	<ol style="list-style-type: none"> <li>8. Storm and surface water (aircraft/runway de-icing, anti-icing &amp; snow removal, vehicle servicing and washing)</li> <li>9. Groundwater impacts</li> <li>10. Sewage discharge to municipal utilities</li> <li>11. <i>Oil/Water separators</i></li> <li>12. <i>Sewage discharge from international transport</i></li> <li>13. <i>Sewage treatment facilities</i></li> </ol>
Waste Management	<ol style="list-style-type: none"> <li>14. Hazardous waste (motor oil/lubricants, antifreeze, aviation fuel, solvents, fuels, batteries, contaminated dredgate, contaminated soil)</li> <li>15. Non-hazardous waste (cardboard, paper, wood, glass, aluminum cans, general waste)</li> </ol>
Resource Use	<ol style="list-style-type: none"> <li>16. Fuels</li> <li>17. Energy consumption</li> <li>18. Water use</li> </ol>

Hazardous Materials Management	19. ODS (Halon fire extinguishers, fire suppression systems, A/C, HVAC units) 20. Acids in batteries 21. Glycol 22. Radioactive materials 23. Explosives 24. Paints/Solvents 25. Aircraft fire fighting foam 26. Underground storage tanks 27. Aboveground storage tanks 28. <i>Petroleum</i> (Diesel, Avgas, Jet Fuel, Engine oil, Gasoline, Bunker-C, Hydraulic fluid) 29. <i>Compressed gases</i> 30. <i>General chemicals</i> (cleaning agents, lubricants, etc.)
Emergency Response Plan	31. Spills: fuels 32. Spills: chemicals 33. Fires 34. Aircraft disasters 35. <i>Leaks</i> 36. <i>Transportation of Dangerous Goods incidents</i>
Land Management	37. Contaminated and potentially contaminated sites 38. Building management 39. Construction
<i>Administration</i>	40. <i>Environmental Assessment</i> 41. <i>Certificates of Approval (CA)</i> 42. <i>Human resource management</i>

Each of the major categories contained in Table 1 are briefly described below.

## 5.1 AIR EMISSIONS

As an aircraft maintenance and operational facility, ASD can affect air quality in the following ways:

- painting operations;
- aircraft fuel combustion;
- ground vehicles/equipment fuel combustion;
- fumes from chemicals used in maintenance shops; and
- particulate matter generated by maintenance shops' equipment.

ASD can influence the quantity of emissions released from aircraft while on the ground, but has little control over the aircraft engines producing the emission. As aircraft operators, ASD can control emissions through the selection of aircraft, and their maintenance and operation. Aircraft maintenance operations, however, are much more controllable. For instance emissions from painting operations can be monitored and somewhat controlled.

ASD can monitor both the emissions released from airport operations and their potential impact on the environment by periodically sampling and analyzing air releases. A monitoring program provides the data with which to ensure that air quality at its facilities is within acceptable federal and provincial limits.

## **5.2 NOISE EMISSIONS**

ASD produces notable noise emissions from the following sources:

- aircraft (fixed wing and rotary wing); and
- construction sites.

Noise emissions from these sources present potential problems for business centres and the community surrounding the airport. Noise management practices are monitored by the Ottawa - Macdonald-Cartier International Airport. ASD operations are included in this management program.

Noise management is the collection of activities undertaken to minimize the impacts of aircraft noise on surrounding communities. It is done to enhance the airport's stated objective of being a good neighbor, to avoid restrictions being placed on operations and to enhance the economic viability of the facility.

## **5.3 WATER QUALITY**

ASD can affect water quality via:

- storm and surface water through: aircraft de-icing, anti-icing & snow removal, vehicle servicing and washing;
- groundwater impacts;
- sewage discharge to municipal utilities;
- oil/water separators;
- sewage discharge from international flights; and
- sewage treatment facilities.

Aircraft maintenance operations involve the use of a variety of chemical products which if not properly used, contained, collected or disposed of, can make their way into nearby bodies of water. Chemicals used in aircraft de-icing/anti-icing, runway/taxiway/apron de-icing, and runway cleaning are of primary concern. Pollutants such as fuel can also be

discharged during fire training practices and accidental spills. Other examples related to aircraft and vehicle maintenance include grease, oil, detergents, solvents, acids and alkalines. Construction activities can also create environmental damage by causing soil erosion and high levels of sedimentation in nearby waters.

## **5.4 WASTE MANAGEMENT**

The types of waste managed at ASD are classified as hazardous waste and non-hazardous waste.

### **5.4.1 HAZARDOUS WASTE**

As noted in the previous section, ASD uses a number of products that require special handling. These materials also require special disposal from both health and safety and environmental perspectives. The collection, containment, storage and disposal of hazardous waste is done so in accordance with the *Transportation of Dangerous Goods Act*. A description of hazardous materials found at ASD is included in Section 5.6.

### **5.4.2 NON-HAZARDOUS WASTE**

The handling, transportation and disposal of waste is becoming increasingly more complex and multi-disciplinary, requiring a variety of waste management strategies. It is no longer acceptable to simply collect and remove solid waste generated at facilities. As good corporate citizens, ASD must seek ways of minimizing the amount of waste which ends up at landfill sites.

All TC facilities are encouraged to seek and promote ways of reducing product consumption and waste generation, and re-using materials. They are also encouraged to institute, or participate in, recycling programs for paper, cardboard, metal, food waste, tins, glass, tires, and wood, where facilities or markets are available.

## **5.5 RESOURCE USE**

The TC *Sustainable Development Strategy* commits this department to improve conservation of all natural resources. At ASD these resources include:

- fuels;
- energy consumption; and
- water use.

## **5.6 HAZARDOUS MATERIALS MANAGEMENT**

Management of hazardous materials is one of the most important environmental aspects associated with ASD. The types of hazardous materials include the following:

- ODS, including; Halon for fire extinguishers, fire suppression systems, A/C, HVAC units;
- acids in batteries;
- glycol;
- radioactive materials;
- explosives;
- paints/solvents;
- aircraft fire fighting foam;
- underground storage tanks;
- aboveground storage tanks;
- petroleum, including; diesel, avgas, jet fuel, engine oil, gasoline, Bunker-C, hydraulic fluid;
- compressed gases; and
- general chemicals, for example; cleaning agents, lubricants etc.

For the purpose of the ASD IER, hazardous materials are defined as the following:

- “dangerous goods” as defined under the *Transportation of Dangerous Goods Act* and that are regulated for transportation within and across borders;
- hazardous materials as outlined under the facilities’ Workplace Hazardous Materials Information System (WHMIS);
- other materials posing a threat to public safety and/or the environment as regulated under the *Canadian Environmental Protection Act (CEPA)* and other relevant legislation; and
- any material that can present a risk to human health or the environment by virtue of its chemical, physical or toxicological properties as defined in the TC Toxic Substances Management Policy, can be considered “hazardous”.

An inventory of all hazardous materials used and stored at the facilities is maintained at the site through their WHMIS Material Safety Data Sheets (MSDS) Database and should be included in their environmental emergency plan. The inventory should define type, quantity and location of the materials stored on ASD property.

## **5.7 EMERGENCY RESPONSE PLAN**

An Environmental Emergency Response Plan outlines the sequence of communication and response actions which must be implemented quickly to deal with various environmental emergencies. The objective of the environmental emergency response plan is to provide a complete, immediate and successful response to an emergency incident. Emergencies that may arise at ASD are:

- spills: fuels;
- spills: chemicals;
- fires;

- aircraft disasters;
- leaks; and
- transportation of dangerous goods incidents.

## 5.8 LAND MANAGEMENT

As an aircraft maintenance and operational facility, ASD must manage their property in respects to the following:

- contaminated and potentially contaminated sites;
- building management; and
- construction.

ASD must monitor any environmental aspects that have the potential to contaminate the soil of their or the surrounding property. Building management and construction are facility level aspects which should be monitored on a as per project basis i.e. routine land management such as landscaping, the use of road salt, actions to stop soil erosion etc.

## 5.9 ADMINISTRATION

Environmental concerns are also present at the administrative level of ASD. Different projects and undertakings may require CAs from government organizations. TC lands may require an Environmental Assessment (EA) be carried out in order to meet different regulatory requirements.

ISO 14001 requires an EMS to contain a description of the human resource management at the facility and its relation to environmental duties and responsibilities. An organizational framework detailing these environmental duties and responsibilities must be developed.

This category is not mentioned specifically in the site inventory of environmental aspects - Appendix C. EAs and CAs are project specific aspects and can therefore not be associated with any individual area within ASD. Human resource management is, however, an environmental aspect which encompasses ASD as a whole, and includes every employee.

## 5.10 IDENTIFICATION OF ENVIRONMENTAL ASPECTS BY AREA

The environmental aspects were identified for each individual room in both buildings. Given the broad scope of activities within the two buildings, especially the hangar, a room by room inspection was used to gather information dealing with ASD environmental aspects. This information was then condensed into a table format which includes;

- room name and number;
- room function;
- environmental aspects; and
- policies and procedures.

The room name and number correspond to the site maps, which can be found in **Appendix D**. The room function provides a brief description of the activities carried out in the room and equipment used. The environmental aspects correspond to those listed in **Table 1**, with both the category and specific aspects being listed. Policies and procedures which apply to the specific rooms are included as well. A more detailed summary of these policies and procedures can be found in **Section 6.1**. The environmental aspects table can be found in **Appendix C**.

## **6.0 EXISTING PRACTICES AND PROCEDURES**

ISO 14001 requires that practices and procedures be in place to address the facilities environmental aspects, environmental policy, and their objectives and targets. The following section outlines the existing practices and procedures used at ASD in relation to the environment.

### **6.1 MANAGEMENT PRACTICES AND PROCEDURES**

**ASD Maintenance Control Manual (MCM);  
Policy Manual, Procedures Manual and Check Sheets Manual**

These manuals contain no specific environmental sections. However, they clearly describe the activities performed within the various maintenance shops at the pilot project facility. The MCM Procedures Manual has been written for facility maintenance personnel, it is used in conjunction with the ASD Policy Manual. Copies of these manuals are available in each maintenance shop in the hangar.

Although there are no specific environmental sections, there are references which relate to the environmental aspects of ASD operations. For instance, disposal methods for the individual shops are outlined in the MCM. However, this does not include the disposal of hazardous waste. These manuals include, but are not limited to, procedures for the following areas:

- helicopter component overhaul shop;
- avionics/avionic test equipment;
- safety equipment;
- stores;
- maintenance contracts;
- battery shop;
- mechanical workshop;
- nondestructive testing;
- generator shop;
- refinishing shop;
- cadmium brush plating;
- aircraft fuel - storage and handling;
- electrical shop;
- heat treatment of metals; and
- calibration of air data computers and altimeters.

#### **AEO Shop Procedures Manual**

This manual provides specific procedures for a number of shops at ASD. The shops include:

- generator shop;
- avionics maintenance;
- instrument shop;
- battery shop;
- hydraulic shop; and
- refinishing shops.

### **ASD Policies and Procedures Manual**

This manual includes a section titled "Environmental". However the section is presently blank. Existing sections include policies for aircraft de-icing/anti-icing and storage of firearms policy. Other existing policies include the storage of explosives, the purchase, storage, use and disposal of radioactive material and spill response procedures. A Transportation of Dangerous Goods section is presently under revision. The Policies and Procedures Manual as a whole is also presently under revision.

One of the important details of this manual is the potential for improvement. Sections on training procedures and resource management already exist. Other sections which are presently blank include Facilities, and the above mentioned Environmental Sections. Each of these sections provide some of the structure needed for the required EMS documentation.

### **ASD Dangerous Goods Program Policies and Directives Manual**

This manual is outdated, as its last revision was made in 1992. However it does include important policies and past directives. The ground work for important EMS documentation is present in this manual but needs extensive revision so as to meet the requirements of the ISO standard. Examples of policies and directives found in this manual are included in section 4.4.1 Internal Criteria.

## **6.2 PROCUREMENT AND CONTRACTING PRACTICES AND PROCEDURES**

As mentioned in Section 4.5, there is a Procurement of New Chemical Products Policy. However, it is not enforced at the present time. Environmentally friendly products are given first consideration where ever possible. If these products meet the financial needs and production levels of the pilot project facility they are given preference to other non-environmentally friendly products.

Contracted parties are responsible for assuring that their work meets legal requirements. However, there is no documented procedure for assuring that this practice is carried through.

### **6.3 EMERGENCY RESPONSE PRACTICES AND PROCEDURES**

Emergency Response Practices and Procedures such as spill response and clean up are presently under revision.

### **6.4 EMPLOYEE AWARENESS AND TRAINING PRACTICES AND PROCEDURES**

ASD has training practices and procedures, in place for Transportation of Dangerous Goods (TDG), WHIMS and spill response. The Manager of Environmental Protection provides the required WHIMS training to new employees. Supervisors in the various shops are trained in spill response techniques and are responsible for passing this information on to their staff. Although there are no documented training procedures, the disposal of hazardous waste and the employee awareness about related processes are satisfactory. The Manager of Environmental Protection at ASD has developed an efficient and compliant procedure for the collection, storage, and disposal of all hazardous waste generated on site. The level of awareness is maintained by both the Manager of Environmental Protection and the Material Safety Data Sheets (MSDS) produced through the WHIMS program.

## **7.0 INCIDENTS, OPPORTUNITIES AND INTERESTED PARTIES**

Information on previous environmental incidents should be used to develop a baseline associated with the facilities environmental aspects. A historical perspective including incidents of non-compliance, internal and external audits, and the view of interested parties can be used to develop this baseline and the EMS.

### **7.1 PREVIOUS INCIDENTS AND NON-COMPLIANCE**

A very important aspect of an ISO 14001 EMS is information pertaining to any environmental incidents or non-compliance's with government regulations.

ASD was charged in 1988 with illegal dumping of hazardous waste. The infraction occurred as the result of an unauthorized waste hauler being contracted to dispose of aviation fuel. The waste hauler dumped the fuel into a local creek, leading to ASD being charged under provincial regulations. This incident led to the development of the Dangerous Goods Program (Environmental) at ASD. No records of this incident have yet been recovered.

The hazardous waste program now monitors all aspects associated with hazardous waste. The Manager of Environmental Protection is responsible for the maintenance and documentation of the hazardous waste program.

### **7.2 OPPORTUNITIES FOR COMPETITIVE ADVANTAGE**

ASD service aircraft from TC and other federal and Crown organizations. It could in future service aircraft for clients from organizations outside of the federal government on a fee for service basis. In this case, it would be very beneficial to be ISO 14001 registered, as many private sector companies are looking for high environment standards from their suppliers.

In the interim, ISO 14001 registration would still provide a competitive advantage when dealing with the existing ASD clientele, due to increased pressure on federal departments to become "green" and to implement SDSs. All federal departments are required to review suppliers of goods and services, and to provide preference to those which are more environmentally sound, where it is economically feasible.

Finally, existing clients may also be worried about "flow through liability" in cases where their property, such as an aircraft that contains hazardous materials, is not handled in a duly diligent manner. The existence of a fully functional EMS goes a long way towards establishing a defense of due diligence, and again would provide a competitive advantage over similar facilities.

### 7.3 INTERESTED PARTIES

Table 2 lists any outside parties which could be interested in how ASD manages the environmental aspects associated with their facilities. The comments included describe the listed organizations contracted duties or environmental concerns.

TABLE 2: INTERESTED PARTIES

Interested Party	Comments
<p>J.H. Ryder Machinery Limited P.O. Box 8251 Ottawa, ON K1G 3H7</p>	<ul style="list-style-type: none"> <li>• Servicing and maintenance for the TC mobile equipment at the pilot project facility.</li> <li>• For both gas-powered and electric powered mobile equipment.</li> <li>• Provides regular servicing and maintenance of the mobile equipment use lubricating devices, replacement of motor oil, replacing oil filter cartridge, check battery and cooling system, hydraulic oil maintained in lift systems.</li> <li>• Performance checks</li> <li>• Maintenance Service</li> </ul>
<p>Shell Canada Products Limited GABE Inc. Ottawa Int. Airport 100 Service Road Ottawa, ON K1V 9B4</p>	<ul style="list-style-type: none"> <li>• Provides all aviation fuels to the pilot project facility</li> <li>• Perform all aircraft de-icing/anti-icing</li> <li>• Contract run through PWGSC</li> </ul>
<p>PWGSC Property Manager</p>	<p>O-276, the training centre, responsibilities include but are not limited to:</p> <ul style="list-style-type: none"> <li>• Minor repairs;</li> <li>• Cleaning: carpets, floors, windows, etc.;</li> <li>• Electrical, materials;</li> <li>• HVAC, materials, service contract;</li> <li>• Fire Protection, service contract;</li> <li>• Water &amp; Sewage, materials, chemical treatment;</li> <li>• Grounds Maintenance, summer &amp; winter;</li> <li>• Administration, Labour;</li> <li>• Other Building Services; travel, materials, waste removal, consumable items; and</li> <li>• PMSS.</li> </ul> <p>T-58, the hangar, responsibilities include but are not limited to:</p> <ul style="list-style-type: none"> <li>• Minor repairs;</li> <li>• Cleaning; interior, carpet/program, windows, drain rodding;</li> <li>• Electrical; Lights in hangar;</li> <li>• HVAC; A/C Contract - Carmichael Ltd., Gas Heaters, Materials, Controls Contract - Andover;</li> <li>• Fire Protection; F/A Contract- Simplex, materials, fire pump testing (diesels - weekly);</li> </ul>

	<ul style="list-style-type: none"> <li>• Water &amp; Sewage; Steam Clean traps/lines - Spring, Chemical Treatment;</li> <li>• Vertical/Horizontal; Elevators - Montgomery, Chairlift, Doors - Capital</li> <li>• Miscellaneous/Other; Bird Control, Communications, Travel, Pagers, Waste Removal, Kitchen;</li> <li>• Grease Traps/Appliance;</li> <li>• Administration; Labour;</li> <li>• PMSS; and</li> <li>• Maintenance &amp; Corrective Action.</li> </ul> <p>• Representatives stationed on site to fulfill the responsibilities as outlined above.</p>
Department of National Defense (DND)	<ul style="list-style-type: none"> <li>• Representative stationed on site responsible for preparing DND aircraft for flight.</li> </ul>
Lockheed Martin	<ul style="list-style-type: none"> <li>• Renting space from ASD.</li> <li>• Contracted by DND to perform tests and upgrades on the DND aircraft.</li> </ul>
Ontario Region Civil Aviation	<ul style="list-style-type: none"> <li>• Renting office on second floor from ASD.</li> </ul>
Laidlaw	<ul style="list-style-type: none"> <li>• Responsible for pick up and disposal of hazardous waste.</li> <li>• Contracted through PWGSC</li> </ul>
Other Government Departments; Environment Canada Fisheries and Oceans Canada Department of National Defense	<ul style="list-style-type: none"> <li>• House aircraft belonging to listed government departments.</li> <li>• Provide maintenance and flight preparation for aircraft.</li> <li>• This list can include any government department who own aircraft and require the use of the pilot project facilities hangar and/or maintenance services.</li> </ul>
Surrounding Communities and Business	<ul style="list-style-type: none"> <li>• These parties have an interest in how the pilot project facility manages their environmental aspects.</li> <li>• Noise emissions are a good example of an environmental aspect which effects the listed parties.</li> </ul>
Ottawa - Macdonald-Cartier International Airport Authority (OMCIAA)	<ul style="list-style-type: none"> <li>• ASD located at OMCIAA, various environmental responsibilities are shared between the two organizations, i.e. spill response, water quality issues and other potential environmental incidents.</li> </ul>

## 8.0 GAP ANALYSIS AGAINST THE ISO 14001 AND 14004 STANDARDS

A gap analysis was performed to help assess ASD relative to the ISO 14001 and 14004 standards. This process involved using both standards as a checklist, providing information for the EMS planning phase. The information gathered from the gap analysis is organized into Table 3: Gap Analysis, which includes:

- the ISO 14001 and 14004 requirements, the section name and number from the standard;
- a yes or no answer as to whether a gap exist between ASD's present environmental management system and the particular sections of the ISO standards; and
- comments, which include what existing components are in place and what needs to be done in these sections to meet the standards' requirements.

The large number of identified gaps can be attributed to the fact that the ASDEMS is in the early stages of development.

TABLE 3: GAP ANALYSIS

ISO 14001/14004 Requirements		Gap ?	Comments
Item #/name	Description		
4.1 General Requirements	EMS must be developed to meet the requirements as described in clause 4 of the ISO 14001 standard.	Yes	ASD has not yet implemented an ISO 14001 EMS.
4.1.1 General	EMS should begin with regulatory compliance, limiting liability and making more efficient use of materials.	No	ASD has begun developing their EMS, focusing on the listed areas of importance.
4.1.2 Top Management Commitment and leadership	Commitment from top management of the organization to improve the environmental management of its activities, products and services.	No	Management at ASD have committed to the development of an ISO 14001 EMS.
4.1.3 Initial Environmental Review (IER)	The current position of an organization with regard to the environment can be established by means of an IER.	No	The process and results of the IER have been documented and opportunities for EMS development have been identified within this document.
4.2 Environmental Policy	Top management shall define the organization's environmental policy and ensure that it meets all the requirements of ISO 14001.	Yes	The environmental policy is presently being developed.
4.3 Planning	The organization shall formulate a plan to aid in the development and implementation of their EMS.	Yes	A plan is being formulated to help aid in the development and implementation of the ASD EMS.

ISO 14001/14004 Requirements		Gap ?	Comments
Item #/name	Description		
4.3.1 Environmental Aspects	The organization shall establish and maintain procedures to identify the environmental aspects of its activities, products or services and determine those which have significant impacts on the environment.	Yes	ASD has identified all environmental aspects associated with their facilities. Plans for determining their significance are being developed.
4.3.2 Legal and other requirements	The organization shall establish and maintain procedures to which the organization subscribes, that are applicable to the environmental aspects of its activities, products or services.	Yes	ASD maintains a number of different sources used to keep environmental legislation and regulations up to date. These sources must now be applied to the identified environmental aspects and be communicated to appropriate employees.
4.3.3 Objectives and Targets	The organization shall establish and maintain documented environmental objectives and targets, at each relevant function and level within the organization.	Yes	ASD has not established objectives and targets for its EMS. This step will be completed following the development of the environmental policy.
4.3.4 Environmental Management Program(s)	The organization shall establish and maintain programs for achieving its objectives and targets.	Yes	Once objectives and targets have been set, environmental management programs will be developed.
4.4 Implementation and operation	The organization shall implement and operate their EMS according to the requirements of ISO 14001.	Yes	Once the planning of the ASD EMS is complete it will be implemented into ASD operations.
4.4.1 Structure and responsibility	Roles, responsibility and authorities shall be defined, documented and communicated in order to facilitate effective environmental management.	Yes	Commitment from management has been given. Next steps must include the definition of structure and responsibility with regards to environmental management.

ISO 14001/14004 Requirements		Gap ?	Comments
Item #/name	Description		
4.4.2 Training, awareness, and competence	The organization shall identify training needs. It shall require that all personnel whose work may create a significant impact upon the environment, have received appropriate training.	Yes	ASD presently has an effective WHIMS and TDG programs in place which include training. The level of awareness towards hazardous waste management is satisfactory. This level of awareness is maintained by both the environmental officer and the MSDSs produced and distributed through the WHIMS program. Besides these programs no specific environmental training programs presently exist at the pilot project facility. The level of awareness is high, however, considering that there are no other formal environmental training programs in place.
4.4.3 Communication	With regard to its environmental aspects and EMS, the organization shall establish and maintain procedures for internal and external communication.	Yes	As the ASD EMS is developed, procedures for communication, with regard to its environmental aspects and EMS, will be developed. There are a few existing means for communication with interested parties such as complaint forms, spill incident reports and transportation of dangerous goods reports.
4.4.4 EMS Documentation	The organization shall establish and maintain information, in paper or electronic form, to describe the core elements of the management system and their interaction and provide direction to related documentation.	Yes	All sections of the ASD EMS will be documented and offered in a manual format, both on paper and in electronically.
4.4.5 Document control	The organization shall establish and maintain procedures for controlling all documents required by the ISO 14001 standard.	Yes	As the EMS is developed, ASD will establish and maintain procedures for controlling all documents as required by the ISO 14001 standard.

ISO 14001/14004 Requirements		Gap ?	Comments
Item #/name	Description		
4.4.6 Operational control	The organization shall identify those operations and activities that are associated with the identified significant environmental aspects in line with its policy, objectives and targets.	Yes	As the EMS is developed, ASD will have to devise, where none exist, procedures that correspond to each identified significant environmental aspect, the environmental policy, and objectives and targets.
4.4.7 Emergency preparedness and response	The organization shall establish and maintain procedures to identify potential for and respond to accidents and emergency situations, and for preventing and mitigating the environmental impacts that may be associated with them.	Yes	ASD emergency preparedness and response procedures are presently under revision. An effort should be made to ensure that these procedures conform with the requirements of the ISO 14001 standard.
4.5 Checking and corrective action	The organization shall include a scheduled process for checking their EMS and implementing appropriate corrective action.	Yes	Once ASD has developed their EMS, the process of checking and corrective action will be implemented as per management's schedule.
4.5.1 Monitoring and measurement	The organization shall establish and maintain documented procedures to monitor and measure, on a regular basis, the key characteristics of its operations and activities that can have a significant impact on the environment.	Yes	The manager of environmental protection presently monitors the hazardous waste produced at the facilities. Specifically he documents and analyses the quantities of waste and frequency in which they are produced. In the past monitoring programs were in place to check groundwater contamination, air emissions and surface run off. These programs are no longer in place but the equipment required to perform these tests is still available.
4.5.2 Nonconformance and corrective and preventive action	The organization shall establish and maintain procedures for defining responsibility and authority for handling and investigating nonconformance, taking action to mitigate any impacts caused and for initiating and completing corrective and preventive action.	Yes	The ASD Dangerous Goods Program is designed to monitor nonconformance with applicable legislation and regulations. The collection, storage and disposal of hazardous waste is catalogued and reviewed by the Manager of environmental protection. Nonconformances are reviewed and documented by the manager of

			<p>environmental protection. Procedures are modified accordingly if and when any nonconformances do occur. The practices used with the hazardous waste program must be applied to the other significant environmental aspects in order to meet the needs of the ISO 14001 standard.</p>
4.5.3 Records	The organization shall establish and maintain procedures for the identification, maintenance and disposition of environmental records. These records shall include training records and the results of audits and reviews.	Yes	<p>The following lists some of the required EMS records and whether or not they exist at ASD:</p> <ul style="list-style-type: none"> <li>• information on applicable environmental laws or other requirements (various sources maintained by manager of environmental protection)</li> <li>• complaint records (noise management program)</li> <li>• training records (WHMIS, emergency response)</li> <li>• product information (MSDS)</li> <li>• inspection, maintenance and calibration records (old audits performed on site, none in past three years)</li> <li>• pertinent contractor and supplier information (none)</li> <li>• incident reports (maintained by manager of environmental protection)</li> <li>• information on emergency preparedness and response (procedures under revision)</li> <li>• records of significant environmental impacts (maintained by manager of environmental protection)</li> <li>• management reviews (none)</li> </ul> <p>Where no records presently exist, records and procedures must be developed and maintained for each of the above listed areas.</p>

ISO 14001/14004 Requirements		Gap ?	Comments
Item #/name	Description		
4.5.4 Environmental management system audit	The organization shall establish and maintain a program and procedure for periodic EMS audits. The audit program and procedure should cover: the activities and areas to be considered in audits; the frequency of audits; the responsibilities associated with managing and conducting audits; the communication of audit results; auditor competence; and how audits will be conducted.	Yes	The ASD inspection team presently does not have any EMS audit program or procedures. Once the EMS is developed an audit program will be developed to cover all of the requirements of the standard. It is yet to be determined who will be responsible for conducting the EMS Audits.
4.6 Management review	The organization's top management shall, at intervals that it determines, review the EMS, to ensure its continuing suitability, adequacy and effectiveness. The management review process shall ensure that the necessary information is collected to allow management to carry out this evaluation. This review shall be documented.	Yes	Once the EMS is developed, senior management at ASD will have to determine intervals at which the EMS will be reviewed. The management review must address any possible need for changes to policy, objectives and other elements of the EMS, in the light of EMS audit results and changing circumstances. This review will be documented.

# APPENDIX A

## INITIAL ENVIRONMENTAL REVIEW SUPPORT RESOURCES

### INITIAL ENVIRONMENTAL REVIEW SUPPORT RESOURCES INDEX:

ENVIRONMENTAL ASPECTS AT ASD.....	A3
SITE REVIEW CHECKLIST.....	A8
IER REVIEW.....	A9

This page was intentionally left blank.

## A2.1 Environmental Aspects at ASD

The following is a checklist designed to help us identify the environmental aspects associated with Aircraft Services. Each of these aspects are outlined in Transport Canada's Departmental EMS Manual. Theoretically every environmental aspect associated with ASD should be listed here. A section is included at the end of the checklist where additional aspects can be added should anyone know of any other applicable inclusions.

Place a check mark in the box if you feel the listed aspect is present, no matter how minor, here at Aircraft Services. If the aspect is not present at all simply put an X in the corresponding box.

### Air Emissions

- heating system in buildings
- painting operations
- vehicles and equipment operations (fueling etc.), including aircraft
- incinerators
- heating plants (fuel oil/bunkers)
- heating (offices)

### Noise Emissions

- aircraft
- helicopters
- maintenance (building or site)
- construction (building or site)

Waste Water Discharges

- storm and surface water
- aircraft/runway de-icing
- anti-icing and snow removal
- rubber removal
- live-fire training
- vehicle servicing and washing (volatile organic compounds in discharge effluent)
- petroleum product storage
- construction activities (storage of materials used during activities)
- storage of maintenance chemicals

discharges from treatment systems for fueling, servicing etc.

sewage discharges

Waste Disposal

Non-Hazardous Waste

Hazardous Waste:

- motor oil/lubricants
- antifreeze
- aviation fuel
- solvents
- batteries
- contaminated dredgate
- contaminated soil

Hazardous Material Handling

- Petroleum and Allied Petroleum Products
- Polychlorinated Biphenyls (PCBs)
- Ozone-Depleting Substances (CFC's and halons)
- Petroleum :  
diesel  
Avgas  
jet fuel  
engine oil

gasoline  
bunker C and lubricants glycol  
pesticides and herbicides  
radioactive materials  
explosives  
paints/solvents aircraft  
fire fighting foam

Storage Tanks

underground storage tanks

aboveground storage tanks

Contaminated Land Management

environmental site assessment (EASs):

air contamination

soil contamination:

- volatile components of gasoline (usually benzene, toluene, ethylbenzene, and xylenes)
- chlorinated organic compounds including solvents
- such as trichlorethylene and tetrachlorethylene
- polychlorinated biphenyls (PCBs)
- dioxins and furans
- polycyclic aromatic hydrocarbons (PAHs)

water contamination

Maintenance of Pollution Control Equipment

Air:

HVAC units

chillers

paint spray booths

other air emission devices

Water:

Oil/Water separators

Fleet Management

energy conservation

non-renewable resources conservation

oil & grease (oil filters, oil solids)

effect of emissions on air pollution index

Spills

fuel

chemical

radioactive spills

Emergency Preparedness and Response

Major and minor fuel spill-incidents

Chemical spill incidents

PCB spill incidents

Radioactive incidents

Transportation of dangerous goods incidents

Facility fire incidents

Off-site source incidents

Vehicle accidents/incidents

Buried storage and linear facility leakage incidents

Others:

If you can think of any more please indicate them here.

## A3.1 Site Review Checklist

### Key

<b>Name &amp; #</b>	Room # and name i.e. A110 Instrument shop
<b># of employees</b>	# per shift and # of shifts
<b>Admin. Details</b>	Administrative Details, Name/Group/Routing Symbol, i.e. Joe Blow/Maintenance/AAFAB
<b>Env. Aspects</b>	Environmental Aspects i.e. any chemicals, noise, emissions, drainage, disposal, etc.
<b>Programs/Pro.</b>	Programs and Procedures associated with Env. Aspects, whether they be documented or just common practice.

### Site Review Checklist

<b>Name &amp; #</b>	<b># of employees</b>	<b>Admin. Details</b>	<b>Env. Aspects</b>	<b>Programs/ Pro.</b>

## A4.1 IER Review

### Input / Output Model

#### KEY

<b>Term</b>	<b>Example</b>
<i>Environmental Aspect</i>	Oil, fuel, paint i.e. Disposal of Hazardous Waste
<i>Transition</i>	Action needed to meet Standard i.e. Procedure exists but is not documented ( <b>Document</b> ), Procedure exists and is documented ( <b>Review</b> ), No procedure exists, no documentation ( <b>Develop</b> )
<i>Environmental Procedure</i>	Procedure associated with env. aspect i.e. Hazardous Waste Disposal Procedure

<b>Input</b>		<b>Output</b>
<i>Environmental Aspect</i>	<i>Transition</i>	<i>Environmental Procedure</i>

This page was intentionally left blank.

**APPENDIX B**

**FEDERAL AND PROVINCIAL LEGISLATION AND REGULATIONS**

**FEDERAL AND PROVINCIAL LEGISLATION AND REGULATIONS  
INDEX:**

FEDERAL LEGISLATIONS AND REGULATIONS.....B3  
PROVINCIAL LEGISLATIONS AND REGULATIONS.....B6

This page was intentionally left blank.

## Federal Legislation and Regulations

### Air Emissions:

#### Canadian Environmental Protection Act (R.S.C. 1985, c. 16)

- Ozone-depleting Substances Regulations (SOR/94-408)
- Ozone-depleting Substances Products Regulations (SOR/92-631)
- Chlorofluorocarbon Regulations (SOR/90-127)
- Chlorobiphenyls Regulations (SOR/91 - 152)
- Ambient Air Quality Objectives (P.C. 1989 - 1482)
- Ambient Air Quality Objectives Order, No. 1 (C.R.C. 1978, c.403)
- Ambient Air Quality Objectives Order, No. 2 (C.R.C. 1978, c.404)
- Ambient Air Quality Objectives Order No. 3 (SOR/ 78 - 74)
- Environmental Code of Practice for Elimination of Fluorocarbon Emissions from Refrigeration and Air Conditioning Systems
- Environmental Code of Practice on Halons

#### Motor Vehicle Safety Act (S.C. 1993, c. 16)

- Motor Vehicle Safety Regulations (C.R.C. 1978, c. 1038)

### Water Quality:

#### Canada Water Act:

- Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments

#### Canadian Environmental Protection Act (R.S.C. 1985, c. 16)

#### Fisheries Act (R.S.C. 1985, c. F-14)

- Metal finishing Liquid Effluent Guidelines (C.R.C. 1978, c.811)
- Penalties and Forfeitures Proceeds Regulations (C.R.C. 1978, c. 827)

## Hazardous Materials Management

#### Canadian Environmental Protection Act

- Environmental Code of Practice for Underground Storage Tanks Systems Containing Petroleum Products and Allied Petroleum Products CCME, 1993)
- Environmental Code of Practice for Aboveground Storage Tank Systems Containing Petroleum Products and Allied Petroleum

- Products (CCME, Petroleum Products 1994)
- Prohibition of Certain Toxic Substances Regulations (SOR/96 - 237)
  - Registration of Storage Tank Systems for Petroleum Products and Allied Petroleum Products on Federal Lands Regulations (SOR/97 - 10)

**Hazardous Materials Information Review Act**

- Hazardous Materials Information Review Act Appeal Board Procedures Regulations (SOR/91 - 86)
- Hazardous Materials Information Review Regulations (SOR/88 - 456)

**Hazardous Products Act**

- Controlled Products Regulations (SOR/88 - 66)
- Ingredient Disclosure List (SOR/88-64)

**National Transportation Act**

- Flammable Liquids Bulk Storage Regulations (C.R.C. 1978, c. 1148)

**Transportation of Dangerous Goods Act (S.C. 1992, c. 34)**

- Transportation of Dangerous Goods Regulations (SOR/85-77)

**Atomic Energy Control Act**

- Transport Packaging of Radioactive Materials Regulations (SOR/83 - 740)

**Canadian Environmental Protection Act (R.S.C. 1985, c. 16)**

- Export and Import of Hazardous Wastes Regulations (SOR/92-637)

**Land Management:**

**Canadian Environmental Protection Act (R.S.C. 1985, c. 16)**

**Administration:**

**Canadian Environmental Assessment Act (S.C. 1992, c. 37)**

- Environmental Assessment and Review Process Guidelines Order (SOR/84-467)
- Inclusion List Regulations (SOR/94-637)
- Exclusion List Regulations (SOR/94-639)
- Law List Regulations (SOR/94-636)
- Emergencies Act (S.C. 1988, c. 29)
- Comprehensive Study List Regulations (SOR/94-638)

- Coordination by Federal Authorities of Environmental Assessment Procedures and Requirements Regulations (SOR/ 97 - 181)

Government Organization Act, 1979

- Environmental Assessment and Review Process Guidelines Order (SOR/84-467)

**Resource Use:**

Canadian Environmental Protection Act

- Diesel Fuel Regulations (SOR/97 - 1 10)

**Waste Management:**

Canadian Environmental Protection Act

- List of Hazardous Waste Authorities (SOR/92 - 636)
- List of Toxic Substances Authorities (SOR/92 - 162)
- Masked Name Regulations (SOR/94 -261)

# Provincial Legislation and Regulations

## Air Emissions:

### Environmental Protection Act (R.S.O. 1990, c. E-19)

- General - Air Pollution Regulations (R.R.O. 1990, Reg. 346)
- Ambient Air Quality Criteria Regulations  
1990, Reg. 336)
- Ozone - Depleting Substances - General Regulations  
1990, Reg. 356)
- Motor Vehicles Regulations (R.R.O. 1990, Reg. 353)
- Sulfur Content of Fuels Regulations and Gasoline Volatility Regulation  
(R.R.O. 1990, Reg. 361)
- Boilers Regulations (R.R.O. 1990, Reg. 338)
- Effluent Monitoring General (O. Reg. 695/88)
- Halon Fire Extinguishing Equipment (O. Reg. 413194)

## Water Quality:

### Ontario Water Resources Act (OWRA), (R.S.O. 1990, c. O.40)

- Discharge Reporting
- Sewage works/systems
- Sewage works subject to Approval under the Environmental  
Assessment Act (O. Reg. 207/97)
- Water Management - Policies, Guidelines, Provincial Water Quality  
Objectives of the Ministry of Environment and Energy
- Water Works and Sewage Works Regulation (O. Reg. 435/93)

### Environmental Protection Act

- Guidelines for the Protection and Management of Aquatic Sediment  
Quality in Ontario
- Guidelines for Environmental Protection Measures at Chemical  
Storage Facilities
- Sewage System Regulation (R.R.O. 1990, Reg. 358)

### Ontario Water Resources Act (R.S.O. 1990, c. O.40)

- Building Code Act, 1992

### Ontario Water Resources Act (OWRA), (R.S.O. 1990, c. O.40)

## **Land Management:**

Abandoned Motor Vehicles (EPA, s. 61)

Litter (EPA, s. 84)

## **Emergency Response Plan:**

Environmental Protection Act (R.S.O. 1990, c. E.19)

- Spills Regulation (R.R.O. 1990, Reg. 360)

Dangerous Goods Transportation Act (R.S.O. 1990, c. D.1)

- Dangerous Goods Transportation Act General Regulations (R.S.O. 1990, Reg 261, amended 1995, Reg. 190)

## **Administration:**

The Environmental Assessment Act (R.S.O. 1990, c. E.18)\*  
amendments to EAA (S.O. 1993, c.27), Environmental Assessment and Consultation  
Improvement Act (S.O. 1996, c.27)

- Environmental Assessment Act General Regulations (R.R.O. 1990, Reg.334)
- The Ontario Environmental Assessment Board Rules of Practice (R.R.O. 1990, Reg. 335)

## **Resource Use:**

Gasoline Handling Act (R.S.O. 1990, c. G.4)

- Gasoline Handling Code (R.R.O. 1990, Reg. 532)

Energy Act (R.R.O. 1990, c. E.16)

- Fuel Oil Code (R.R.O. 1990, Reg. 329)

## **Waste Management:**

Environmental Protection Act (R.S.O. 1990, c. E-19)

- Containers Regulation (R.R.O. 1990, Reg. 340)

- General Waste Management Regulations (R.R.O. 1990, Reg. 347)

## **Hazardous Materials Management:**

### **Environmental Protection Act**

- General - Waste Management Regulation (R.R.O. 1990, Reg. 347)
- Containers Regulation (R.R.O. 1990, Reg. 340)
- The Workplace Hazardous Material Information System (WHMIS) Regulation (R.R.O. 860)

The Ontario Health and Safety Act (R.R.O. 1990, c.0.1)

Explosives Act (R.R.O. 1985, c. E-15)

Hazardous Products Act (R.S.C. 1985, c. H-3)

### **Labeling:**

- Hazardous Products Act (R.S.C. 1985, c H-3)
- Controlled Products Regulations (SOR/88-66)

**APPENDIX C**

**ENVIRONMENTAL ASPECT IDENTIFICATION TABLE**

This page was intentionally left blank.

**Environmental Aspect Identification Table**

Room	Room Function	Potential Aspects	Policies and Procedures
A100 - A108 See Map for room reference	Commissionairs office and Flight Operations Control	<ul style="list-style-type: none"> <li>• Waste Management                             <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use                             <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
A109 Tool Storage	Tools for hanger floor maintenance	<ul style="list-style-type: none"> <li>• Resource Use                             <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
A110 Instrument Shop	Provides minor repair, test and re-certification for a variety of instruments and components used on ASD aircraft and support equipment Workbenches with a variety of electrical power to facilitate the testing of equipment Minor sauderling	<ul style="list-style-type: none"> <li>• Air Emissions                             <ul style="list-style-type: none"> <li>- ground vehicles/equipment</li> <li>- fumes from chemicals</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #29, Section 17-Specialized Maintenance</li> </ul>
A111 Radio Isolation Room	Testing of radio equipment	<ul style="list-style-type: none"> <li>• Air Emissions                             <ul style="list-style-type: none"> <li>- ground vehicles/equipment</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #8, Section 17-Specialized Maintenance</li> </ul>
A112/A113 Storage	storage of equipment quarantine	N/A	
A114 Avionics Power Supply	Electrical power supply	<ul style="list-style-type: none"> <li>• Resource use                             <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
A116 Supervisors and Clerk	Supervisors, Avionics Maintenance	<ul style="list-style-type: none"> <li>Waste Management <ul style="list-style-type: none"> <li>non-hazardous waste</li> </ul> </li> </ul>	
A117 Washroom		<ul style="list-style-type: none"> <li>Resource Use <ul style="list-style-type: none"> <li>water use</li> </ul> </li> </ul>	
A118 Test Equipment Calibration	Calibrating equipment Climate Controlled Room	<ul style="list-style-type: none"> <li>Resource use <ul style="list-style-type: none"> <li>energy consumption</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>ASD MCM Procedure #8, Section 17-Specialized Maintenance</li> </ul>
A119 Avionics Maintenance	Provides full maintenance, repair and overhaul of all avionics systems on ASD client and customer aircraft saudering of parts use of chemicals i.e. cleaning agents, lubricants etc.	<ul style="list-style-type: none"> <li>Air Emissions <ul style="list-style-type: none"> <li>fumes from chemicals</li> </ul> </li> <li>Hazardous Materials Management <ul style="list-style-type: none"> <li>general chemicals</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>ASD MCM Procedure #8, Section 17-Specialized Maintenance</li> </ul>
A120 Informatics Storage	Informatics Storage	<ul style="list-style-type: none"> <li>Waste Management <ul style="list-style-type: none"> <li>non-hazardous waste</li> </ul> </li> </ul>	
B100 Elevator Machine Room	Elevator Machine Room	<ul style="list-style-type: none"> <li>Resource Use <ul style="list-style-type: none"> <li>energy consumption</li> </ul> </li> </ul>	
B101 Central Corridor		<ul style="list-style-type: none"> <li>Resource Use <ul style="list-style-type: none"> <li>energy consumption</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
B102 Mngr. Office	Purchasing	<ul style="list-style-type: none"> <li>• Waste Management <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
B103 Printer Room	Office use	<ul style="list-style-type: none"> <li>• Waste Management <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
B104 Receiving	Receiving	<ul style="list-style-type: none"> <li>• Waste Management <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
B105/B106 Loading	Loading dock	<ul style="list-style-type: none"> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
B107 Compressed gases Cylinders Room	Storage for compressed gases cylinders	<ul style="list-style-type: none"> <li>• Hazardous Materials Management <ul style="list-style-type: none"> <li>- compressed gases</li> </ul> </li> </ul>	
B108 Stationary Stores	Supplies	<ul style="list-style-type: none"> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
B109 Sprinkler Pump Room	Sprinkler system control for every room excluding areas with oscillating foam dispensers Electric Motor Supply/Booster Fire Pump	<ul style="list-style-type: none"> <li>• Resource Use <ul style="list-style-type: none"> <li>- water use</li> <li>- energy consumption</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
B110 Lockheed Martin Spares	Equipment		
B111 Petroleum, Oil, Lubricants	Storage of petroleum, oil, and lubricant products	<ul style="list-style-type: none"> <li>• Hazardous Materials Management <ul style="list-style-type: none"> <li>- petroleum</li> <li>- explosives</li> </ul> </li> <li>Air Emissions <ul style="list-style-type: none"> <li>- fumes from chemicals</li> </ul> </li> </ul>	
B112 Washroom		<ul style="list-style-type: none"> <li>• Resource Use <ul style="list-style-type: none"> <li>- water use</li> </ul> </li> </ul>	
B113 - B126 See Map for room reference	Stores, Log Control, Purchasing, Repaired & Overhauled parts	<ul style="list-style-type: none"> <li>• Waste Management <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
B127/B128 Washroom		<ul style="list-style-type: none"> <li>• Resource Use <ul style="list-style-type: none"> <li>- water use</li> </ul> </li> </ul>	
C100 Electrical Room		<ul style="list-style-type: none"> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
C101 Cleaning Room	Cleaning Room used by all shops One main sink with water gun Two ultrasonic bay cleaners One varsol cleaner One cleaning tank which uses Indusol	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- fumes from chemicals</li> </ul> </li> <li>• Water Quality               <ul style="list-style-type: none"> <li>- sewage discharge to municipal utilities</li> </ul> </li> <li>• Waste Management               <ul style="list-style-type: none"> <li>- hazardous waste</li> </ul> </li> <li>• Hazardous Materials Management               <ul style="list-style-type: none"> <li>- petroleum</li> <li>- general chemicals</li> </ul> </li> <li>• Emergency Response Plan               <ul style="list-style-type: none"> <li>- spills: chemicals</li> <li>- leaks</li> <li>- Transportation of Dangerous Goods incidents</li> </ul> </li> </ul>	
C102 Welding Shop	Welding Gas Tungsten Arc Welder Argon Gas Regulator Liquid Cooled Torch Manual Amperage Control Unit Soft Stainless Steel Wire Wheel or Brush	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- fumes from chemicals</li> <li>- PM</li> </ul> </li> <li>Hazardous Materials Management               <ul style="list-style-type: none"> <li>- compressed gases</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #30, Section 17 - Specialized Maintenance</li> </ul>

Room	Room Function	Potential Aspects	Policies and Procedures
C103 Grinding Shop	Grinding	<ul style="list-style-type: none"> <li>• Air Emissions <ul style="list-style-type: none"> <li>- PM</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #21, Section 17 - Specialized Maintenance</li> </ul>
C104 Steel Storage	Steel Storage	<ul style="list-style-type: none"> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
C105 Machine Room	Metal work	<ul style="list-style-type: none"> <li>• Air Emissions <ul style="list-style-type: none"> <li>- PM</li> </ul> </li> <li>• Waste Management <ul style="list-style-type: none"> <li>- hazardous waste</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #21, Section 17 - Specialized Maintenance</li> </ul>
C106 Etching Room	Etching/cleaning of metal	<ul style="list-style-type: none"> <li>• Air Emissions <ul style="list-style-type: none"> <li>- fumes from chemicals</li> </ul> </li> <li>• Hazardous Materials Management <ul style="list-style-type: none"> <li>- general chemicals</li> </ul> </li> <li>• Waste Management <ul style="list-style-type: none"> <li>- hazardous waste</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Specialized guidelines and procedures for changing old chemicals, mixing new solutions, and disposal procedures</li> </ul>
C107 Hydraulic Shop	<ul style="list-style-type: none"> <li>• Overhaul &amp;/or repair of landing gear components</li> <li>• Overhaul &amp;/or repair of Pressure type fuels, oil, pneumatic or hydraulic pumps</li> </ul>	<ul style="list-style-type: none"> <li>• Air Emissions <ul style="list-style-type: none"> <li>- fumes from chemicals</li> </ul> </li> <li>• Hazardous Materials Management <ul style="list-style-type: none"> <li>- general chemicals</li> </ul> </li> <li>• Waste Management <ul style="list-style-type: none"> <li>- hazardous waste</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #26, Section 17 - Specialized Maintenance</li> </ul>

Room	Room Function	Potential Aspects	Policies and Procedures
C108 Generator Shop	Provides maintenance, repair, overhaul, test & re-certification for a variety of electrical components used on ASD aircraft grinding of parts	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- PM</li> </ul> </li> <li>• Waste Management               <ul style="list-style-type: none"> <li>- hazardous waste</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #28, Section 17 - Specialized Maintenance</li> </ul>
C109 Vari-Drive Room	Generator Testing	<ul style="list-style-type: none"> <li>• Resource use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #28, Section 17 - Specialized Maintenance</li> </ul>
C110 Non Destructive Testing (N.D.T.)	Inspection of avionics parts and equipment Liquid Penetrant, Magnetic Particle, Eddy Current, & Ultrasonics	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- fumes from chemicals</li> </ul> </li> <li>• Hazardous Materials Management               <ul style="list-style-type: none"> <li>- chemicals</li> </ul> </li> <li>• Waste Management               <ul style="list-style-type: none"> <li>- hazardous waste</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #25, Section 17 - Specialized Maintenance</li> </ul>
C111 Storage		<ul style="list-style-type: none"> <li>• Resource use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
C112 Office	Chief, Technician Mechanical Services	<ul style="list-style-type: none"> <li>• Waste Management               <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
C113 Workshop	Makes on & off aircraft repairs & modifications to sheet metal structures including airframes, floats and includes the repair of metal sheathed honeycomb structures Grinding Cutting metal Freezer Control	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- fumes from chemicals</li> </ul> </li> <li>• Waste Management               <ul style="list-style-type: none"> <li>- hazardous waste</li> </ul> </li> <li>• Hazardous Materials Management               <ul style="list-style-type: none"> <li>- chemicals</li> <li>- petroleum</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #31 &amp; #40, Section 17 - Specialized Maintenance</li> </ul>
D100 Corridor to Cafeteria		<ul style="list-style-type: none"> <li>• Resource use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
D101 Washroom		<ul style="list-style-type: none"> <li>• Resource Use               <ul style="list-style-type: none"> <li>- water use</li> </ul> </li> </ul>	
D102 Helicopter Component Overhaul	Inspects, overhauls, repairs & modifies helicopter components Large crane system between room and main shop floor Thermal fitting/press parts	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- fumes from chemicals</li> </ul> </li> <li>• Hazardous Materials Management               <ul style="list-style-type: none"> <li>- compressed gases</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #6, Section 17- Specialized Maintenance</li> </ul>
D103 Cleaning Room	Cleaning parts and tools Varsol Cleaner Grinding and Stripping bench	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- fumes from chemicals</li> <li>- PM</li> </ul> </li> <li>• Waste Management               <ul style="list-style-type: none"> <li>- hazardous waste</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
D104 Quarantine	<ul style="list-style-type: none"> <li>• Parts and equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Resource use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
D105 Elevator Machine Room	Electric controls for elevators	<ul style="list-style-type: none"> <li>• Resource use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
D106 Washroom		<ul style="list-style-type: none"> <li>• Resource Use <ul style="list-style-type: none"> <li>- water use</li> </ul> </li> </ul>	
D107 Team Leaders Office	Team Leader, Rotary Wing Maintenance	<ul style="list-style-type: none"> <li>• Waste Management <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
D108 Manager, Rotary Wing Maintenance	<ul style="list-style-type: none"> <li>• Manager, Rotary Wing Maintenance</li> </ul>	<ul style="list-style-type: none"> <li>• Waste Management <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
D109 Emergency Exit			

Room	Room Function	Potential Aspects	Policies and Procedures
D110 Rotary Wing Maintenance	Main hanger floor Varsol Cleaner <ul style="list-style-type: none"> <li>• Hydraulic Press</li> <li>• Cleaning Sink</li> <li>• Crane/Hoist System</li> <li>• Large Fire Extinguisher</li> <li>• Natural Gas Control for building</li> <li>• Maintenance Vehicles</li> </ul>	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- fumes from chemicals</li> <li>- ground vehicles/equipment</li> </ul> </li> <li>• Noise Emissions               <ul style="list-style-type: none"> <li>- aircraft/helicopters</li> </ul> </li> <li>• Water Quality               <ul style="list-style-type: none"> <li>- oil/water separators</li> </ul> </li> <li>• Waste Management               <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use               <ul style="list-style-type: none"> <li>- water use</li> <li>- energy consumption</li> <li>- fuels</li> </ul> </li> <li>• Hazardous Materials Management               <ul style="list-style-type: none"> <li>- petroleum</li> <li>- ODS</li> </ul> </li> </ul>	
E100 Paint Booth Vestibule	Opening to paint shop Automatic safety doors	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- painting operations</li> </ul> </li> </ul>	
E100 Paint Booth Vestibule	Opening to paint shop Automatic safety doors	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- painting operations</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
E101 Paint Shop	Enclosed Paint Shop Down Draft Air Filtering System Outlets for individual oxygen supply Sensor monitoring emissions in shop	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- painting operations</li> <li>- fumes from chemicals</li> </ul> </li> <li>• Waste Management               <ul style="list-style-type: none"> <li>- hazardous waste</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #31, Section 17 - Specialized Maintenance</li> </ul>
E102 Drying Room	Paint preparation/mixing Storage of Paint, Paint Thinners, Strippers etc.	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- painting operations</li> <li>- fumes from chemicals</li> </ul> </li> <li>• Waste Management               <ul style="list-style-type: none"> <li>- hazardous waste</li> </ul> </li> <li>Hazardous Materials Management               <ul style="list-style-type: none"> <li>- paints/solvents</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #31, Section 17 - Specialized Maintenance</li> </ul>
E103 Composite Repair	Cleaning and Manufacturing of parts for aircraft Grinding Table Climate Controlled Room	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- painting operations</li> <li>- fumes from chemicals</li> </ul> </li> <li>• Waste Management               <ul style="list-style-type: none"> <li>- hazardous waste</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #31, Section 17 - Specialized Maintenance</li> </ul>
E104 Washroom		<ul style="list-style-type: none"> <li>• Resource Use               <ul style="list-style-type: none"> <li>- water use</li> </ul> </li> </ul>	
E105 First Aid Room		<ul style="list-style-type: none"> <li>• Waste Management               <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
E106 Vestibule - Battery Shop	Entrance to Battery Shop Storage of Chemicals and Batteries	<ul style="list-style-type: none"> <li>• Air Emissions <ul style="list-style-type: none"> <li>- fumes from chemicals</li> </ul> </li> <li>• Waste Management <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- non-hazardous waste</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #16, Section 17-Specialized Maintenance</li> </ul>
E107 Battery Shop	<ul style="list-style-type: none"> <li>• Nickel Cadmium Testing Area</li> </ul>	<ul style="list-style-type: none"> <li>• Air Emissions <ul style="list-style-type: none"> <li>- fumes from chemicals</li> </ul> </li> <li>• Waste Management <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- non-hazardous waste</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #16, Section 17-Specialized Maintenance</li> </ul>
E108 Battery Treatment	<ul style="list-style-type: none"> <li>• Office, Pete Harvey</li> </ul>	<ul style="list-style-type: none"> <li>• Waste Management <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #16, Section 17-Specialized Maintenance</li> </ul>
E109 Storage Room	<ul style="list-style-type: none"> <li>• Used Battery Storage</li> </ul>	<ul style="list-style-type: none"> <li>• Waste Management <ul style="list-style-type: none"> <li>- hazardous waste</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #16, Section 17-Specialized Maintenance</li> </ul>
E110/E111 Battery Shop	Lead Acid Batteries are Neutralized Sump on floor	<ul style="list-style-type: none"> <li>• Air Emissions <ul style="list-style-type: none"> <li>- fumes from chemicals</li> </ul> </li> <li>• Waste Management <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- non-hazardous waste</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #16, Section 17-Specialized Maintenance</li> </ul>

Room	Room Function	Potential Aspects	Policies and Procedures
E112 Mechanical Room	old storage room, converted to mechanical room	<ul style="list-style-type: none"> <li>• Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
E113 Engine Repair	Repair large and small engine parts Some work is done directly on hanger floor	<ul style="list-style-type: none"> <li>• Waste Management               <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- non-hazardous waste</li> </ul> </li> <li>• Hazardous Materials Management               <ul style="list-style-type: none"> <li>- petroleum</li> </ul> </li> <li>• Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> <li>- water use</li> </ul> </li> </ul>	
E114 Engine Repair	Cleaning and Testing of parts and equipment Varsol Cleaner Nozzle Tester, Cleaner Sink for Cleaning	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- fumes from chemicals</li> </ul> </li> <li>• Waste Management               <ul style="list-style-type: none"> <li>- hazardous waste</li> </ul> </li> <li>• Hazardous Materials Management               <ul style="list-style-type: none"> <li>- petroleum</li> </ul> </li> </ul>	
E115/E116 Washroom		<ul style="list-style-type: none"> <li>• Resource Use               <ul style="list-style-type: none"> <li>- water use</li> </ul> </li> </ul>	
E117 Corridor to DND		<ul style="list-style-type: none"> <li>• Resource use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
E118 Team Leader, Heavy Maintenance	<ul style="list-style-type: none"> <li>• Team Leader, Heavy Maintenance</li> </ul>	<ul style="list-style-type: none"> <li>• Waste Management               <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
E119 Kitchen	used by cafeteria and DND staff to clean dishes	<ul style="list-style-type: none"> <li>• Resource Use               <ul style="list-style-type: none"> <li>- water use</li> </ul> </li> </ul>	
E120 Aircraft Maintenance Storage	Storage of chemicals and parts Quarantine area	<ul style="list-style-type: none"> <li>• Hazardous Materials Management               <ul style="list-style-type: none"> <li>- general chemicals</li> </ul> </li> </ul>	
E121 Bead Blast Shop	Media Blasting Workshop, Plastic Media Blasting Three separate paint stripping machines; aluminum oxide, silica sand & glass-bead media	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- painting operations</li> <li>- fumes from chemicals</li> <li>- PM</li> </ul> </li> <li>• Waste Management               <ul style="list-style-type: none"> <li>- hazardous waste</li> </ul> </li> <li>• Hazardous Materials Management               <ul style="list-style-type: none"> <li>- general chemicals</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #31, Section 17 - Specialized Maintenance</li> </ul>
F100 Hanger Floor	Parking for planes and helicopters Support equipment; hoists, hydraulic lifts, grooming, mules, ground power systems, cleaning, motorized hydraulic lift, portable crane etc. (see appendix #? For list of support vehicles) Drains on floor Drain along hanger doors 8 Oscillating Foam	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- painting operations</li> <li>- ground vehicles/equipment</li> <li>- ODS</li> <li>- fumes from chemicals</li> </ul> </li> <li>• Noise Emissions               <ul style="list-style-type: none"> <li>- aircraft/helicopters</li> </ul> </li> <li>• Water Quality               <ul style="list-style-type: none"> <li>- wastewater discharge</li> <li>- sewage discharge</li> </ul> </li> </ul>	

	<p>Dispenser stations  Work benches  Tool chests  Spill Kits, "Oclansorb"  Waste Rags Collection  Waste barrel - Oil  Paint Shop Extension  Glycol, drum spill tray  Inlet to Underground Storage Tank (Oil)  Compressed gases Cylinders  Chemical Storage  Storage of large parts i.e. propellers, engines  Halon Fire Extinguishers  Oil/Water Separator under hanger floor</p>	<p>from intl. transport  - sewage discharge to municipal utilities  - sewage treatment facilities  - oil/water separators  - storm and surface water</p> <ul style="list-style-type: none"> <li>• Waste Management <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- water use</li> <li>- energy consumption</li> <li>- fuels</li> </ul> </li> <li>• Hazardous Materials Management <ul style="list-style-type: none"> <li>- underground storage tank</li> <li>- glycol</li> <li>- ODS</li> <li>- petroleum</li> <li>- compressed gases</li> </ul> </li> <li>• Emergency Response Plan <ul style="list-style-type: none"> <li>- spills: chemicals</li> <li>- spills: fuels</li> <li>- leaks</li> <li>- fires</li> <li>- Transportation of Dangerous Goods incidents</li> </ul> </li> </ul>	
--	---	---	--

Room	Room Function	Potential Aspects	Policies and Procedures
G102 Supply Room	Office Supplies Sink, Fridge	<ul style="list-style-type: none"> <li>• Waste Management               <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> <li>- water use</li> </ul> </li> </ul>	
G103 Office	Chief, Facilities, Environment & Site Safety	<ul style="list-style-type: none"> <li>• Waste Management               <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
G104 Facilities, Environment & Site Safety	Facilities, Environment & Site Safety Group	<ul style="list-style-type: none"> <li>• Waste Management               <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
G105 Tire Shop	Tire Testing Compressed gases	<ul style="list-style-type: none"> <li>• Waste Management               <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Hazardous Materials Management               <ul style="list-style-type: none"> <li>- compressed gases</li> </ul> </li> </ul>	
G106 Tire Storage	New and Used Tire Storage Tool Storage	<ul style="list-style-type: none"> <li>• Waste Management               <ul style="list-style-type: none"> <li>- hazardous waste</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
G107 Lockhead Martin	Office Outside work for DND	<ul style="list-style-type: none"> <li>• Waste Management               <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
G108 Pump House	Diesel Engine Fire Pump Control Room Five Above Ground Storage Tanks (2-Foam, 3-Diesel) Two Electric Generators Four Drums of Foam Two Diesel Operated Pumps, Four Large Batteries for Each One Direct Point Emission Stack Outside One Tank of Industrial Coil Cleaner One Cleaning Sink Four Buckets of Petroleum Based Lubricant Three Large Dock Bay Doors One Underground Storage Tank (Water) Small Crane Used to Lift Two Floor Base Boards for Access to Underground Storage Tank One Drum of Glycol	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- ground vehicles/equipment</li> </ul> </li> <li>• Resource Use               <ul style="list-style-type: none"> <li>- water use</li> <li>- energy consumption</li> <li>- fuels</li> </ul> </li> <li>• Hazardous Materials Management               <ul style="list-style-type: none"> <li>- above ground storage tanks</li> <li>- underground storage tanks</li> <li>- acids in batteries.</li> <li>- glycol</li> <li>- petroleum</li> </ul> </li> <li>• Emergency Response Plan               <ul style="list-style-type: none"> <li>- spills: chemicals</li> <li>- spills: fuels</li> <li>- leaks</li> <li>- fires</li> <li>- Transportation of Dangerous Goods incidents</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
G109 Aircraft Groomers	Provide cleanliness, serviceability & esthetics of the interiors & exteriors of the ASD aircraft fleet & the hanger itself	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- ground vehicles/equipment</li> <li>- fumes from chemicals</li> </ul> </li> <li>• Water Quality               <ul style="list-style-type: none"> <li>- sewage discharge from Intl. Transport</li> <li>- sewage discharge to Municipal Utilities</li> <li>- sewage treatment facilities</li> </ul> </li> <li>• Waste Management               <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use               <ul style="list-style-type: none"> <li>- water use</li> <li>- energy consumption</li> </ul> </li> <li>• Hazardous Materials Management               <ul style="list-style-type: none"> <li>- general chemicals</li> </ul> </li> <li>• Emergency Response Plan               <ul style="list-style-type: none"> <li>- spills: chemicals</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
G110 Storage	Storage Area for Groomers One Drum of Heavy Duty Degreaser	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- fumes from chemicals</li> </ul> </li> <li>• Waste Management               <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use               <ul style="list-style-type: none"> <li>- water use</li> <li>- energy consumption</li> </ul> </li> <li>• Hazardous Materials Management               <ul style="list-style-type: none"> <li>- general chemicals</li> <li>- glycol</li> </ul> </li> </ul>	
G111 Storage	Storage of large parts and equipment Fuels Exhaust System Cleaning Supplies Compactor (Trash)	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- ground vehicles/equipment</li> <li>- fumes from chemicals</li> </ul> </li> <li>• Waste Management               <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> </ul>	
A200 - A 226 See Map for room reference	Administrative offices, meeting rooms, washrooms, lobby, copy/fax area	<ul style="list-style-type: none"> <li>• Waste Management               <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
B200 - B234 See Map for room reference	Offices, library/archives, meeting rooms, engineering, central registry, computerized aircraft maintenance program office, purchasing.	<ul style="list-style-type: none"> <li>• Waste Management <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
C200 - C204 See Map for room reference	Electrical room, washroom, ladies locker room/showers	<ul style="list-style-type: none"> <li>• Waste Management <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- water use</li> <li>- energy consumption</li> </ul> </li> </ul>	
C205 Mechanical Room	<ul style="list-style-type: none"> <li>• Air Handling Units (3)</li> <li>• Electric Motors (8)</li> <li>• Exhaust Fan</li> <li>• Supply/Return Fan (4)</li> <li>• Circulating Pumps (5)</li> <li>• Expansion Tank</li> <li>• Gravity Tanks (4)</li> <li>• Domestic Water Heaters (2)</li> </ul>	<ul style="list-style-type: none"> <li>• Air Emissions <ul style="list-style-type: none"> <li>- heating system in building</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- water use</li> <li>- energy consumption</li> </ul> </li> </ul>	
C206 - C211 See Map for room reference	Informatics, storage closets.	<ul style="list-style-type: none"> <li>• Waste Management <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
C212 Cafeteria		<ul style="list-style-type: none"> <li>• Resource Use               <ul style="list-style-type: none"> <li>- water use</li> <li>- energy consumption</li> </ul> </li> <li>• Waste Management               <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> </ul>	
C213/C214 Kitchen	Dishwasher Exhaust Hood Fire Extinguisher System Freezer Cabinet Two Deep Fryers Microwave Oven Reach-In Refrigerator Two Refrigerated Display Cases Steam Table Toaster Grease Trap	<ul style="list-style-type: none"> <li>• Resource Use               <ul style="list-style-type: none"> <li>- water use</li> <li>- energy consumption</li> </ul> </li> <li>• Waste Management               <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Hazardous Materials Management               <ul style="list-style-type: none"> <li>- ODS</li> </ul> </li> </ul>	
C215 East End Corridor		<ul style="list-style-type: none"> <li>• Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
C216 Bonded Mezzanine Storage	<ul style="list-style-type: none"> <li>• Helicopter Shop Storage</li> <li>• Oscillating Foam Dispenser</li> </ul>	<ul style="list-style-type: none"> <li>• Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> <li>- water use</li> </ul> </li> </ul>	
C217 Helicopter Stores	<ul style="list-style-type: none"> <li>• Parts &amp; Equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Waste Management               <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
C218 Telephone Closet	<ul style="list-style-type: none"> <li>• Telephone Control Panel</li> </ul>	<ul style="list-style-type: none"> <li>• Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
C219 Data Closet	<ul style="list-style-type: none"> <li>• Data Closet</li> <li>• Informatics Storage</li> </ul>	<ul style="list-style-type: none"> <li>• Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
C220 Helicopter Engine	Engine Repair Varsol Cleaner Compressed gases Cylinders Fuel Nozzle Tester	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- fumes from chemicals</li> </ul> </li> <li>• Waste Management               <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use               <ul style="list-style-type: none"> <li>- water use</li> <li>- energy consumption</li> </ul> </li> <li>• Hazardous Materials Management               <ul style="list-style-type: none"> <li>- compressed gases</li> <li>- general chemicals</li> </ul> </li> </ul>	
C221 Helicopter Storage	Quarantine Compressed gases Cylinders Crane System to lift parts up from shop floor	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- fumes from chemicals</li> </ul> </li> <li>• Waste Management               <ul style="list-style-type: none"> <li>- hazardous waste</li> </ul> </li> <li>• Hazardous Materials Management               <ul style="list-style-type: none"> <li>- compressed gases</li> <li>- general chemicals</li> </ul> </li> <li>• Emergency Response Plan               <ul style="list-style-type: none"> <li>- spills: chemicals</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
C222 - C226 See Map for room reference	Men's Locker room/showers, washroom.	<ul style="list-style-type: none"> <li>• Waste Management <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- water use</li> <li>- energy consumption</li> </ul> </li> </ul>	
C227 Janitor Closet	<ul style="list-style-type: none"> <li>• Janitor Supplies</li> </ul>	<ul style="list-style-type: none"> <li>• Waste Management <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Hazardous Materials Management <ul style="list-style-type: none"> <li>- general chemicals</li> </ul> </li> </ul>	
C228 Vestibule		<ul style="list-style-type: none"> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
C229 Washroom		<ul style="list-style-type: none"> <li>• Resource Use <ul style="list-style-type: none"> <li>- water use</li> </ul> </li> </ul>	
C230 Mechanical Room	<ul style="list-style-type: none"> <li>• Hot Water Boilers (3)</li> <li>• Hot Water Circulating Pumps (7)</li> <li>• Electric Motors (4)</li> <li>• Expansion Tank</li> </ul>	<ul style="list-style-type: none"> <li>• Air Emissions <ul style="list-style-type: none"> <li>- ground vehicles/equipment</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- water use</li> <li>- energy consumption</li> </ul> </li> </ul>	
E200 Corridor		<ul style="list-style-type: none"> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
E201 Carpentry Shop	grinding tables, wood working equipment	<ul style="list-style-type: none"> <li>• Air Emissions <ul style="list-style-type: none"> <li>- PM</li> </ul> </li> <li>• Waste Management <ul style="list-style-type: none"> <li>- hazardous waste</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ASD MCM Procedure #31, Section 17 - Specialized Maintenance</li> </ul>

Room	Room Function	Potential Aspects	Policies and Procedures
E202 Data Closet		<ul style="list-style-type: none"> <li>Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
E203 Electrical Room		<ul style="list-style-type: none"> <li>Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
E204 Safety Equipment Section	Inspect & Certify all safety equipment for aircraft Washer & Dryer	<ul style="list-style-type: none"> <li>Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> <li>- water use</li> </ul> </li> <li>Waste Management               <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> </ul>	
E205 Upholstery Storage	Storage	<ul style="list-style-type: none"> <li>Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
E206 Upholstery Shop	Repair, reconditioning, overhaul & fabrication of aircraft furnishings & equipment	<ul style="list-style-type: none"> <li>Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> <li>Waste Management               <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>ASD MCM Procedure #31, Section 17 - Specialized Maintenance</li> </ul>
E207 Washroom		<ul style="list-style-type: none"> <li>Resource Use               <ul style="list-style-type: none"> <li>- water use</li> </ul> </li> </ul>	
E208 East Mezzanine Storage	ASD Gym Quarantine Upholstery Work Bench DND Storage Parts Storage	<ul style="list-style-type: none"> <li>Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
G200 Vestibule		<ul style="list-style-type: none"> <li>Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	

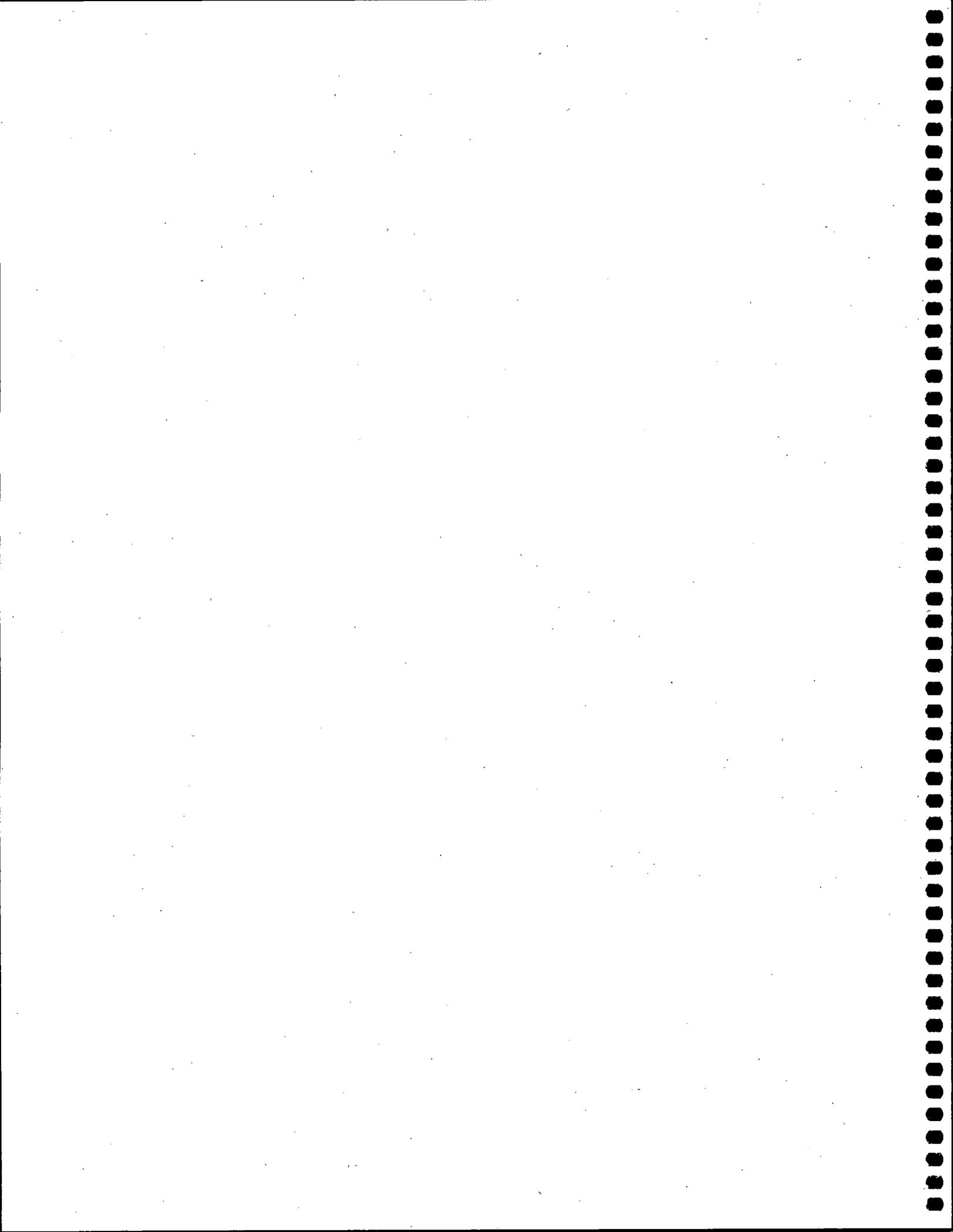
Room	Room Function	Potential Aspects	Policies and Procedures
G201 Telephone Room/Office		<ul style="list-style-type: none"> <li>• Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
G202 Electrical Room		<ul style="list-style-type: none"> <li>• Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
G203 Mechanical Room	Electric Motors (3) Exhaust Fan Circulating Pump (2) Expansion Tank	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- ground vehicles/equipment</li> </ul> </li> <li>• Resource Use               <ul style="list-style-type: none"> <li>- water use</li> <li>- energy consumption</li> </ul> </li> <li>• Hazardous Materials Management               <ul style="list-style-type: none"> <li>- glycol</li> <li>- general chemicals</li> </ul> </li> <li>• Emergency Response Plan               <ul style="list-style-type: none"> <li>- spills: chemicals</li> </ul> </li> </ul>	
G204 West Mezzanine Storage	Storage of maintenance equipment, parts and monitoring equipment	<ul style="list-style-type: none"> <li>• Waste Management               <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
E300 - E304 Mechanical Rooms	mechanical rooms, with drying room, air intake room, paint shop mechanics	<ul style="list-style-type: none"> <li>• Resource Use               <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
101 Simulator Bay	Two Aircraft Simulators Hydraulic System Smoke Generator Compressed gases Air Compressor Storage	<ul style="list-style-type: none"> <li>• Air Emissions                             <ul style="list-style-type: none"> <li>- vehicle and equipment operations</li> <li>- fumes from chemicals</li> </ul> </li> <li>• Waste Management                             <ul style="list-style-type: none"> <li>- hazardous waste</li> </ul> </li> <li>• Hazardous Materials Management                             <ul style="list-style-type: none"> <li>- petroleum</li> <li>- compressed gases</li> </ul> </li> </ul>	
102/104 Briefing Rooms		<ul style="list-style-type: none"> <li>• Waste Management                             <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use                             <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
107 Simulator Maintenance Workshop	Minor repairs to equipment Diagnostic Stations Storage	<ul style="list-style-type: none"> <li>• Air Emissions                             <ul style="list-style-type: none"> <li>- fumes from chemicals</li> </ul> </li> <li>• Waste Management                             <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use                             <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
108/109 Washrooms		<ul style="list-style-type: none"> <li>• Resource Use                             <ul style="list-style-type: none"> <li>- water use</li> </ul> </li> </ul>	
110 Electrical Room		<ul style="list-style-type: none"> <li>• Resource Use                             <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
111 Boiler Room	Hot Water Boiler (2) Heat Pump (2) Compressed Air Tank Glycol Heating System Domestic Water Heater	<ul style="list-style-type: none"> <li>• Air Emissions <ul style="list-style-type: none"> <li>- ground vehicles/equipment</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- water use</li> <li>- energy consumption</li> </ul> </li> <li>• Hazardous Materials Management <ul style="list-style-type: none"> <li>- compressed gases</li> </ul> </li> </ul>	
112 Technical Classroom	Workbenches used for soldering Technical equipment	<ul style="list-style-type: none"> <li>Air Emission <ul style="list-style-type: none"> <li>- fumes from chemicals</li> </ul> </li> <li>Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
113 - 117	Offices, library, photocopy room, Informatics	<ul style="list-style-type: none"> <li>• Waste Management <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
120/121/139/145 Projection Rooms 1-4	A/V Equipment for Classroom	<ul style="list-style-type: none"> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
122 Chief, Simulator Operation	Office	<ul style="list-style-type: none"> <li>• Waste Management <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
124 Simulator Computer Room	Simulator Computer Control	<ul style="list-style-type: none"> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
126 Cafeteria		<ul style="list-style-type: none"> <li>• Waste Management <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
127 Boardroom		<ul style="list-style-type: none"> <li>• Waste Management <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
133 Closet	Coats	<ul style="list-style-type: none"> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
134/143/144/146 Classroom 1-4	Training Classrooms	<ul style="list-style-type: none"> <li>• Waste Management <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>• Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	
137, 138, 140-142	Offices	<ul style="list-style-type: none"> <li>Waste Management <ul style="list-style-type: none"> <li>- non-hazardous waste</li> </ul> </li> <li>Resource Use <ul style="list-style-type: none"> <li>- energy consumption</li> </ul> </li> </ul>	

Room	Room Function	Potential Aspects	Policies and Procedures
O-276 Hydraulic Pump Building	Air Compressor Refrigeration Air Dryer Absorption Cooler Electric Motor (5) Exhaust Fan (2) Chillwater Pump Circulating Pump Expansion Tank (2) Glycol Tank (2) Hydraulic Power Supply Unit (2) Glycol Canisters (3)	<ul style="list-style-type: none"> <li>• Air Emissions               <ul style="list-style-type: none"> <li>- ground vehicles/equipment</li> </ul> </li> <li>• Waste Management               <ul style="list-style-type: none"> <li>- hazardous waste</li> </ul> </li> <li>• Resource Use               <ul style="list-style-type: none"> <li>- water use</li> </ul> </li> <li>• Hazardous Materials Management               <ul style="list-style-type: none"> <li>- glycol</li> <li>- general chemicals</li> </ul> </li> <li>• Emergency Response               <ul style="list-style-type: none"> <li>- spills: chemicals</li> <li>- Transportation of Dangerous Goods incidents</li> </ul> </li> </ul>	



Aircraft Services Directorate  
Environmental Management System  
Procedures Manual

August 17, 1999  
Version 1.1

This page was intentionally left blank.

# Table of Contents

<b>1.0 PURPOSE</b>	<b>1</b>
<b>2.0 METHODOLOGY</b>	<b>1</b>
2.1 What is this Manual?	1
2.2 Who does this Manual apply to?	1
2.3 How does this manual relate to other ASD EMS Documentation?	2
2.3.1 Level 1: ASD EMS Directives Manual	2
2.3.2 Level 2: ASD EMS Procedures Manual	2
2.3.3 Level 3: ASD EMS Operational Controls Manual	2
2.3.4 Level 4: ASD EMS Records Manual	2
2.4 How to use this Manual?	3
<b>4.0 PROCEDURES</b>	<b>3</b>
4.1 Definitions	3
4.2 Environmental Policy	6
4.2.1 Purpose	6
4.2.2 Scope	6
4.2.3 General	6
4.2.4 Procedure	6
4.3 Planning	8
4.3.1 Identification of Environmental Aspects	8
4.3.1.1 Purpose	8
4.3.1.2 Scope	8
4.3.1.3 General	8
4.3.1.4 Procedure	9
4.3.2 Legal and Other Requirements	11
4.3.2.1 Purpose	11
4.3.2.2 Scope	11
4.3.2.3 General	11
4.3.2.4 Procedure	11
4.3.3 Environmental Objectives and Targets	13

4.3.3.1 Purpose	13
4.3.3.2 Scope	13
4.3.3.3 General	13
4.3.3.4 Procedure	13
4.3.4 Environmental Management Programs	16
4.3.4.1 Purpose	16
4.3.4.2 Scope	16
4.3.4.3 General	16
4.3.4.4 Procedure	16
<b>4.4 Implementation and Operation</b>	<b>18</b>
4.4.1 Environmental Structure and Responsibility	18
4.4.1.1 Purpose	18
4.4.1.2 Scope	18
4.4.1.3 General	18
4.4.1.4 Procedures	19
4.4.2 EMS Training, Awareness and Competence	21
4.4.2.1 Purpose	21
4.4.2.2 Scope	21
4.4.2.3 General	21
4.4.2.4 Procedures	21
4.4.3 Internal EMS Communications	23
4.4.3.1 Purpose	23
4.4.3.2 Scope	23
4.4.3.3 General	23
4.4.3.4 Procedure	23
4.4.4 External EMS Communications	25
4.4.4.1 Purpose	25
4.4.4.2 Scope	25
4.4.4.3 General	25
4.4.4.4 Procedure	25
4.4.5 EMS Document Control	27
4.4.5.1 Purpose	27
4.4.5.2 Scope	27
4.4.5.3 General	27
4.4.5.4 Procedure	27
4.4.6 Environmental Operational Controls	29
4.4.6.1 Purpose	29
4.4.6.2 Scope	29
4.4.6.3 General	29
4.4.6.4 Procedures	29
4.4.7 Environmental Emergency Response Plan	31
4.4.7.1 Purpose	31
4.4.7.2 Scope	31
4.4.7.3 General	31
4.4.7.4 Procedure	31

4.5 Checking and Corrective Action	32
4.5.1 Monitoring and Measurement	32
4.5.1.1 Purpose	32
4.5.1.2 Scope	32
4.5.1.3 General	32
4.5.1.4 Procedure	33
4.5.2 Nonconformance & Corrective & Preventive Action	35
4.5.2.1 Purpose	35
4.5.2.2 Scope	35
4.5.2.3 General	35
4.5.2.4 Procedure	35
4.5.3 Environmental Records	38
4.5.3.1 Purpose	38
4.5.3.2 Scope	38
4.5.3.3 General	38
4.5.3.4 Procedure	38
4.5.4 Internal EMS Audit	39
4.5.4.1 Purpose	39
4.5.4.2 Scope	39
4.5.4.3 General	39
4.5.4.4 Procedure	39
<b>4.6 Management Executive EMS Review</b>	<b>41</b>
4.6.1 Purpose	41
4.6.2 Scope	41
4.6.3 General	41
4.6.4 Procedure	41

This page was intentionally left blank.

## 1.0 Purpose

This document is the Environmental Management System (EMS) Procedures Manual for Aircraft Services Directorate (ASD) located at 58 Services Road, Gloucester, Ontario. The purpose of this manual is to provide a reference document to Aircraft Services staff, particularly to staff who have environmental responsibilities, on the procedures associated with each component of the ASD EMS.

The ASD EMS Procedures Manual has been designed to help meet the requirements of the ISO Standard 14001: *Environmental Management Systems - Specification with guidance for use*.

The Procedures Manual is used to help develop, implement, maintain and continually improve the ASD EMS. These procedures are followed by all ASD employees to whom they apply. They are maintained and continually improved by the Facilities, Environment and Site Safety Division. This manual is supported by the ASD Environmental Policy and any nonconformance with these procedures will result in an appropriate corrective action.

## 2.0 Methodology

The methodology used for developing all ASD EMS procedures follows the requirements specified in the ISO Standard 14001: *Environmental Management Systems - Specification with guidance for use* and the ISO Standard 14004: *Environmental Management Systems - General guidelines on principles, systems, and supporting techniques*. The following sections outline important questions and answers related to this manual, explaining how the manual fits into the overall ASD EMS, who it applies to and how to use it.

### 2.1 What is this Manual?

This manual is the ASD EMS Procedures Manual. The second of four levels of ASD EMS documentation, the Procedures Manual provides detailed procedures for each section of the ASD EMS. These procedures were designed to aid in the development, implementation, maintenance and continual improvement of the ASD EMS. The Procedures Manual describes how each section of the ASD EMS was developed and defines the roles and responsibilities of those ASD employees involved with each phase of EMS development.

### 2.2 Who does this Manual apply to?

The Procedures Manual applies to all ASD employees whose responsibilities include direct involvement with the development, implementation, maintenance and/or continual

improvement of the EMS. The Facilities, Environment and Site Safety Division (FESSD) are responsible for the overall development and maintenance of the EMS. Therefore the majority of these procedures apply to their Division. The ASD Director General and Management Executive are responsible for such things as defining the Environmental Policy and conducting Management Executive EMS Reviews, procedures for which are included in this Manual. ASD employees other than the FESSD and Management Executive whose responsibilities include EMS related functions are identified in this manual.

### **2.3 How does this manual relate to other ASD EMS Documentation?**

The ASD EMS Procedures Manual is the second of four levels of ASD EMS documentation, the following sections provide a brief description of each.

Each level of EMS documentation exist separate of one another. This manual, as with all EMS documentation, is maintained by the Facilities, Environment and Site Safety Division.

#### **2.3.1 Level 1: ASD EMS Directives Manual**

The ASD EMS Directives Manual documents the organization's directives towards each section of their ISO 14001 based EMS.

#### **2.3.2 Level 2: ASD EMS Procedures Manual**

The ASD EMS Procedures Manual provides detailed procedures for each section of the ASD EMS. These procedures were designated to aid in the development, implementation, maintenance and continual improvement of the ASD EMS. Examples of procedures documented in this manual include; the development and maintenance of ASD's Environmental Policy, identification of the Environmental Aspects associated with ASD operations and the process followed when setting Environmental Objectives and Targets for the ASD EMS.

#### **2.3.3 Level 3: ASD EMS Operational Controls Manual**

The ASD EMS Operational Controls Manual documents the procedures followed by those operations and activities performed at ASD that are associated with the ASD identified significant environmental aspects, in line with its environmental policy, objectives and targets.

#### **2.3.4 Level 4: ASD EMS Records Manual**

The ASD EMS Records Manual documents all environmental records kept by ASD for their EMS.

## 2.4 How to use this Manual?

This manual consists of 17 separate procedures. Each procedure outlines the process followed by ASD to conform with the requirements of the corresponding section in the ISO Standard 14001: *Environmental Management Systems - Specification with guidance for use*. For example Section 4.3.1; **Identification of Environmental Aspects** corresponds to sub-clause 4.3.1 of the ISO Standard 14001. The clause or sub-clause corresponding to the ISO Standard 14001 is indicated in each individual section. The user should refer to the ISO Standard 14001 for further clarification of its requirements.

The Procedures in this manual have been designed to help ASD employees understand the different processes behind the EMS. Each procedure includes the following:

- **Purpose** - The purpose of the procedure in relation to the ASD EMS;
- **Scope** - The section of ASD's overall EMS the procedure applies to;
- **General** - A general description of the procedure and its requirements; and
- **Procedure** - The specific EMS procedure.

## 4.0 Procedures

The following sections are the ASD EMS procedures and definitions.

### 4.1 Definitions

**Environment** - surroundings in which ASD operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelation.

**Environmental Management System (EMS)** - the part of the overall management system that includes ASD's structure, planning, activities, responsibilities, practices, procedures, processes, and resources for developing implementing, achieving, reviewing, and maintaining the environmental policy.

**Environmental Policy** - statement by ASD of its intentions and principles in relation to its overall environmental performance, which provides a framework for action and for the setting of its environmental objectives and targets.

**Continual Improvement** - process of enhancing the EMS to achieve improvements in overall environmental performance in line with ASD's Environmental Policy.

**Prevention of Pollution** - use of processes, practices, materials, or products that avoid, reduce, or control pollution which may include recycling, treatment, process changes, control mechanisms, efficient use of resources, and material substitution.

**Environmental Aspects** - element of ASD's activities, products, or services that can interact with the environment.

**Environmental Impact** - any change to the environment, whether adverse or beneficial, wholly or partially, resulting from ASD's activities, products, or services.

**Applicable laws and regulations** - legal requirements established by federal authorities that apply to environmental aspects of ASD's activities, products, and services.

**Other requirements** - requirements to which ASD may subscribe, such as provincial regulations, industry codes of practice, agreements with public authorities or non-regulatory guidelines.

**Environmental objective** - The overall environmental goal, arising from the environmental policy, that ASD sets itself to achieve, and which is quantified where practicable.

**Environmental target** - The detailed performance requirement, quantified where practicable, applicable to ASD, or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.

**Interested Party** - individual or group concerned with or affected by the environmental performance of ASD.

**Environmental Management Program**: A strategic plan established by ASD to address all of its set environmental objectives and targets, which defines responsibility, and the means and time-frame by which they are to be achieved.

**Environmental Performance** - measurable results of the EMS, related to ASD's control of its environmental aspects, based on its Environmental Policy, and set Environmental Objectives and Targets.

**Nonconformance** - refers to deficiencies in the EMS, which may vary in severity depending on their nature. As the system fails, nonconforming performance issues may also be evident. Examples may include system compliance deficiencies, objectives and targets missed, incidents and accidents, ineffective procedures, and other elements of the EMS not performing to specification.

**EMS Audit** - a systematic and documented verification process of objectively obtaining and evaluating evidence to determine whether the ASD's EMS conforms to the EMS criteria set by ASD, and for results of this process to management.

**Management Executive EMS Review** - evaluates the status of the ASD EMS and is the means through which continual improvement is achieved and it demonstrates management's commitment and involvement in the EMS.

## 4.2 Environmental Policy

The Following section conforms to clause 4.2 Environmental Policy, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

### 4.2.1 Purpose

The purpose of this procedure is to define the processes followed in developing, maintaining, communicating and continually improving the ASD environmental policy.

### 4.2.2 Scope

This procedure applies to the defining, maintenance and continual improvement of the ASD environmental policy.

### 4.2.3 General

The ASD Environmental Policy has been defined by the Director General and Management Executive, and is appropriate to the nature, scale and environmental impacts of the organizations activities, products and services.

The ASD Environmental Policy includes:

- a commitment to continual improvement and prevention of pollution;
- a commitment to comply with relevant environmental legislation and regulations, and with other requirements to which Aircraft Services subscribes; and
- the framework for setting and reviewing environmental objectives and targets.

The Environmental Policy has been defined in line with Transport Canada's departmental environmental policy which can be found in the **Transport Canada EMS Manual**. The ASD Environmental Policy can be found in the **ASD EMS Directives Manual** and the **ASD EMS Policies and Procedures Manual**.

### 4.2.4 Procedure

1. The ASD Management Executive have appointed the Facilities, Environment and Site Safety Division responsible for, among other EMS duties, the development, maintenance and continual improvement of the ASD Environmental Policy. The FESSD includes the Manager of Environmental Protection, the Manager of Site Safety, the Manager of Facilities Engineering, the Manager, EMS, an environmental support student and the Chief of Facilities, Environment and Site Safety. Separate

teams may be formed to evaluate particular groups of ASD's products, activities and services. The FESSD may call upon other individuals in the organization, as needed.

2. The Manager, EMS explains the ISO 14001 requirements for the Environmental Policy to the FESSD. The FESSD are responsible for developing a draft of the Environmental Policy. The draft Environmental Policy is reviewed by each FESSD member, comments are discussed and incorporated into the policy by the FESSD.
3. The draft Environmental Policy is submitted to ASD Management Executive under **Section 2.2; (Environmental Policy)**, of the **ASD EMS Directives Manual**. Each member of the Management Executive reviews the **ASD EMS Directives Manual** and provides comments to the FESSD. The comments are incorporated into the policy by the Manager, EMS.
4. The ASD Environmental Policy is also included in the **ASD Policies and Procedures Manual**. Management Executive and the ASD Personnel Division must review and approve any additions to the ASD PPM. Any comments generated from these reviews are incorporated into the Environmental Policy by the FESSD, who then resubmit the Environmental Policy to Management Executive. Management Executive must provide the final approval of the Environmental Policy before it is included in the **ASD Policies and Procedures Manual**.
5. Each member of ASD shall receive EMS awareness training as per the ASD EMS training requirements (See **Section 4.4.2**). This training shall include a specific section devoted to the Environmental Policy. The Environmental Policy will be posted on ASD's internal web-site, accessible to all ASD employees.
6. The ASD Environmental Policy will be made available to the public upon request.
7. Any revisions to the ASD Environmental Policy will be communicated to ASD employees through an internal e-mail from the Manager, EMS. These revisions will also be posted on both the internal and external web-site.
8. The FESSD and Management Executive are responsible for ensuring that the Environmental Policy is implemented and that the policy is continually improved as required.
9. This procedure is included as part of both the **Internal EMS Audit and Management Executive EMS Review** (see **Section 4.5.4 and 4.6**). The Audit and Review provide the platform for the continual improvement of this procedure should it require amendments.

## 4.3 Planning

The planning involved in the development of the ASD EMS followed the sub-clauses of clause 4.3 (Planning) of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*. The following sub-clauses of the standard make up the planning process of the ASD EMS:

- Identification of Environmental aspects;
- Legal and other requirements;
- Objectives and targets; and
- Environmental Management Programs.

### 4.3.1 Identification of Environmental Aspects

The Following section conforms to sub-clause 4.3.1 Environmental Aspects, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

#### 4.3.1.1 Purpose

The purpose of this procedure is to define the process followed in identifying the environmental aspects of ASD's activities, products and services.

#### 4.3.1.2 Scope

This procedure applies to all activities, services and products of ASD. For purposes of evaluation, activities, services and products with similar characteristics may be grouped together.

#### 4.3.1.3 General

This procedure covers those environmental aspects of activities, products and services that ASD can control or over which it can be expected to have an influence. Included here is the process followed when identifying all environmental aspects associated with ASD operations.

An initial environmental review will be used to identify all environmental aspects associated with ASD's policy, products, or processes. A baseline evaluation will be conducted of those areas of ASD's operations with identified environmental aspects.

Significance of the identified environmental aspects was determined and the results were considered in the setting of environmental objectives and targets. Details outlining the

purpose, methodology, procedures and results can be found in the **ASD EMS Environmental Aspects Significance Report**.

#### 4.3.1.4 Procedure

1. The EMS is managed by the Manager, EMS, who works with the Facilities, Environment and Site Safety Division (FESSD) to perform the identification and evaluation of ASD's environmental aspects. Separate teams may be formed to evaluate particular groups of ASD's products, activities and services. The FESSD may call upon other individuals in the organization, as needed.
2. The Manager, EMS considers each of the stages of the life cycle of ASD's products, services and activities, including:
  - a) service strategy (operational controls, procurement, etc.);
  - b) use / service; and
  - c) disposal / waste management.

Each product, service or activity is evaluated for environmental impacts in each of these areas; however, products, services or activities may be grouped such that those with similar characteristics can be evaluated concurrently.

3. Any identified environmental aspects are grouped into 8 separate **environmental categories**. These **environmental categories** are in line with Transport Canada's departmental EMS and are as follows:
  - a) Air Emissions;
  - b) Noise Emissions;
  - c) Water Quality;
  - d) Waste Management;
  - e) Resource Use;
  - f) Hazardous Materials Management;
  - g) Emergency Response Plan;
  - h) Land Management; and
  - i) Administration.

The need for additional **environmental categories** is determined based on changes in evaluation of significance methodology or significant changes in ASD policy, products, or processes.

4. Results of FESSD finding are documented in the **ASD Initial Environmental Review**. If the team determines that additional information is needed to evaluate a

particular product, service or activity, the Chief of Facilities, Environment and Site Safety assigns the responsibility for collecting that information to an appropriate FESSD member. New environmental aspects shall be documented appropriately.

5. The Manager, EMS is responsible for working with the FESSD and Management Executive, to ensure that significant environmental aspects identified by the FESSD are considered in setting environmental objectives and targets (see **ASD EMS Environmental Aspects Significance Report**).
6. The results of the most recent significant environmental aspect identification are reviewed as part of the Internal EMS Audit process (see **Section 4.5.4**). Based on this review, the FESSD determines the need to update the environmental aspect significance evaluation. Factors such as improved assessment methodologies, or major changes to the ASD mission, products, and processes are considered in determining the need to update the assessment.
7. The support documents used with collecting the information needed for identifying the environmental aspects and impacts associated with ASD products, services or activities can be found in the **ASD Initial Environmental Review**.
8. This procedure is included as part of both the Internal EMS Audit and Management Executive Review (see **Section 4.5.4 and 4.6**). The Audit and Review provide the platform for the continual improvement of this procedure should it require amendments.

## 4.3.2 Legal and Other Requirements

The Following section conforms to sub-clause 4.3.2 **Legal and other requirements**, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

### 4.3.2.1 Purpose

The purpose of this procedure is to define the process followed by ASD in identifying, accessing, and evaluating laws, regulations, and internal departmental requirements that apply to the environmental aspects of its activities, products, and services.

### 4.3.2.2 Scope

This procedure considers all laws, regulations, and other requirements established at the federal, provincial, and municipal levels of government, and through industry standards, that apply to the environmental aspects of ASD's activities, products and services.

### 4.3.2.3 General

ASD takes all applicable legal and other requirements into account when determining the significance of the identified environmental aspects (see *ASD EMS Environmental Aspects Significance Report*) and when setting its environmental objectives and targets (see Section 3.4).

ASD has made the commitment, in their Environmental Policy, to comply with all environmental legal requirements which apply to their operations.

### 4.3.2.4 Procedure

1. The Manager of Environmental Protection and an environmental support student are responsible for tracking applicable laws and regulations and identifying those related to ASD's activities, products and services. The Manager of Environmental Protection is also responsible for evaluating the potential impacts of these laws and regulations on ASD and its activities, products and services.
2. The Manager of Environmental Protection uses several information sources to track, identify and evaluate applicable laws and regulations. A list of these sources and a brief description of each can found in the **ASD Identification and Tracking of Environmental Legal Requirements Report**, maintained by the Manager of Environmental Protection. The Manager of Environmental Protection monitors these information sources on a regular basis to ensure that new issues are identified on a timely basis.

3. When required, the Manager of Environmental Protection may contact Transport Canada Headquarters for assistance in evaluating applicable laws and regulations. The Director of Environmental Programs, is available to answer any questions the Manager of Environmental Protection may have in regards to legal requirements.
4. The Manager, EMS communicates information on applicable laws and regulations to the appropriate personnel (see Section 4.4.3).
5. The Manager, EMS keeps an up-to-date inventory of all applicable environmental laws and regulations (see **ASD Identification and Tracking of Environmental Legal Requirements Report**). Copies of these environmental laws and regulations are easily accessible to all ASD staff in different manuals and inventories.
6. Should it be revealed through a monitored source update, an **Internal EMS Audit** or an **Management Executive EMS Review** that additional laws and regulations must be tracked and evaluated, the Manager, EMS is responsible for taking the necessary action and updating all EMS documentation.
7. This procedure is included as part of both the **Internal EMS Audit** and **Management Executive EMS Review** (see Section 4.5.4 and 4.6). The Audit and Review provide the platform for the continual improvement of this procedure should it require amendments.

### 4.3.3 Environmental Objectives and Targets

The Following section conforms to sub-clause 4.3.3 **Objectives and targets**, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

#### 4.3.3.1 Purpose

The purpose of this procedure is to define the process followed by ASD for establishing and maintaining documented environmental objectives and targets.

#### 4.3.3.2 Scope

This procedure applies to environmental objectives and targets set at all relevant levels within ASD.

#### 4.3.3.3 General

ASD establishes environmental objectives and targets to help implement the Environmental Policy. Environmental objectives and targets also provide ASD an effective means of measuring the performance of its EMS. When establishing environmental objectives and targets, ASD considers:

- all identified legal and other requirements;
- its environmental aspects determined to be significant;
- its technological, financial, operational, and other business requirement; and
- the views of interested parties.

#### 4.3.3.4 Procedure

1. The EMS is managed by the Manager, EMS, who works with the Facilities, Environment and Site Safety Division (FESSD) in the setting and management of ASD's environmental objectives and targets. Separate teams may be formed to evaluate particular groups of ASD products, activities and services in order to produce the most efficient environmental objectives and targets. The FESSD may call upon other individuals in the organization, as needed.
2. The ASD Director General and Management Executive are responsible for evaluating, approving and providing required resources for environmental objectives and targets which meet one or more of the following criteria:

- Require funds which fall outside of the FESSD's set budget;
- Have the potential to effect or alter current ASD operating practices; and/or
- Involve or effect the operations of interested parties working on, or off, ASD property.

Proposed environmental objectives and targets which are not affected by one of the above mentioned criteria, will be approved and implemented by the FESSD.

3. ASD's Management Executive are responsible for reviewing existing environmental objectives and targets annually as a part of the **Management Executive EMS Review**.
4. The Manager, EMS is responsible for researching information for and proposing to the FESSD potential environmental objectives and targets. The Manager, EMS provides the FESSD with a list of potential environmental objectives and targets for evaluation and final selection.
5. ASD's environmental objectives and targets are consistent with the Environmental Policy, including the commitment to prevention of pollution.
6. The FESSD are responsible for investigating those functional areas of ASD's operations being considered for environmental objectives and targets.
7. When setting the environmental objectives and targets the FESSD consider the following; the legal and other requirements applicable to ASD operations, ASD's identified significant environmental aspects as well as ASD's technological options, and its financial, operational and business requirements.
8. Where applicable, the FESSD takes into consideration the views of interested parties when setting ASD's environmental objectives and targets.
9. Where applicable, the FESSD requests input from those ASD employees whose work would be directly responsible for achieving the environmental objectives and targets. Consulting with the appropriate operational managers and employees, requesting their opinions towards the setting of specific environmental objectives and targets is the responsibility of members of the FESSD.
10. The FESSD considers existing and potential environmental management programs and environmental performance indicators when setting environmental objectives and targets.
11. The overall goal of improving ASD's environmental performance is considered when setting the environmental objectives and targets.

12. The original set of environmental objectives and targets were submitted to Management Executive as a section in the **ASD EMS Directives Manual**. Future environmental objectives and targets shall be presented to Management Executive, by the FESSD, separate of this manual.
13. The Manager, EMS documents and maintains all environmental objectives and targets both electronically and on paper.
14. The FESSD are responsible for communicating the environmental objectives and targets and their associated environmental management programs to all applicable ASD employees.
15. Progress towards meeting the set environmental objectives and targets is reviewed by the FESSD at their division meeting which is held once every two weeks.
16. ASD employees are made aware of the set environmental objectives and targets through the organizations internal web site
17. This procedure is included as part of both the **Internal EMS Audit and Management Executive EMS Review** (see **Section 4.5.4 and 4.6**). The Audit and Review provide the platform for the continual improvement of this procedure should it require amendments.

## 4.3.4 Environmental Management Programs

The Following section conforms to sub-clause 4.3.4 Environmental management programme(s), of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

### 4.3.4.1 Purpose

The purpose of this procedure is to define the process followed by ASD when establishing and maintaining environmental management programs designed for achieving its set environmental objectives and targets.

### 4.3.4.2 Scope

This procedure applies to the development, implementation and maintenance of environmental management programs at all relevant levels within ASD.

### 4.3.4.3 General

ASD establishes and maintains environmental management programs to help meet all set environmental objectives and projects as well as to increase the improvement of its overall environmental performance. Existing management programs will be amended where relevant to ensure that environmental management applies to such projects.

### 4.3.4.4 Procedure

1. The EMS is managed by the Manager, EMS, who works with the Facilities, Environment and Site Safety Division (FESSD) to perform the development, implementation, coordination and maintenance of ASD's environmental management programs. Separate teams may be formed to evaluate particular groups of ASD products, activities and services in order to produce the most efficient environmental objectives and targets. The FESSD may call upon other individuals in the organization, as needed.
2. The FESSD examines the set environmental objectives and targets to determine what, if any, environmental management programs are needed. There are two different approaches to meeting the set environmental objectives and targets through the use of environmental management programs, they are as follows:
  - a) the revision of an existing management program; and
  - b) the development of new environmental management programs.
3. The revision of an existing management program involves the inclusion of the basic ASD EMS requirements, including the set environmental objectives and targets, into the program's workplan.

4. The development of new environmental management programs involves the construction of new programs based completely on the EMS and more specifically the set environmental objectives and targets.
5. Once the outline for the environmental management programs has been determined responsibility for the program must be assigned. All responsibility for EMS environmental management programs will be limited to the FESSD. Only FESSD members will be assigned direct responsibility for and environmental management programs which acts under ASD's EMS.
6. The FESSD will determine the means and time-frame by which the goals of the environmental management programs are to be achieved. This involves the development of a summary of each program including the purpose, methodology and procedures to be followed. The determined time-frames will coincide with all dates set as a part of the specific environmental targets associated with each program. This information will be summarized in Strategy and Action Plans, developed for each program.
7. Strategy and Action Plans for environmental management programs will be developed and maintained by the Manager, EMS.
8. The ASD Director General and Management Executive are responsible for evaluating, approving and providing required resources for environmental management programs which meet one or more of the following criteria:
  - Require funds which fall outside of the FESSD's set budget;
  - Have the potential to effect or alter current ASD operating practices; and/or
  - Involve or effect the operations of interested parties working on, or off, ASD property.

Proposed environmental management programs which are not affected by one of the above mentioned criteria, will be approved and implemented by the FESSD.

9. Once an environmental management program has received approval the FESSD are responsible for notifying the appropriate managers and employees should their involvement be required. Affected employees shall be made aware of the programs and their proposed workplans.
10. This procedure is included as part of both the **Internal EMS Audit and Management Executive EMS Review** (see Section 4.5.4 and 4.6). The Audit and Review provide the platform for the continual improvement of this procedure should it require amendments.

## 4.4 Implementation and Operation

The planning involved in the development of the ASD EMS followed the sub-clauses of clause 4.4 (Implementation and Operation) of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*. The following sub-clauses of the standard make up the planning process of the ASD EMS:

- Structure and responsibility;
- Training, awareness and competence;
- Communication;
- Document control;
- Operational control; and
- Emergency preparedness and response.

### 4.4.1 Environmental Structure and Responsibility

The following section conforms to sub-clause 4.4.1 **Structure and responsibility**, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

#### 4.4.1.1 Purpose

The purpose of this procedure is to define the roles, responsibilities and authorities associated with ASD's EMS and how they are documented and communicated in order to facilitate effective environmental management.

#### 4.4.1.2 Scope

This procedure applies to the defined EMS structure and the associated responsibilities of each ASD employee.

#### 4.4.1.3 General

The identification of key people within ASD who are responsible for the EMS is one element of the EMS. This provides a clear understanding of the chain of command that links the Directors, Officers, Managers and staff to the EMS.

ASD has established and maintains a documented structure for their EMS, which includes the definition of all ASD employees responsibilities towards the EMS, from Management Executive to each staff member.

The ASD Environmental Training and Responsibility Database is used to document and track the responsibilities of all ASD employees, as determined by the EMS.

#### 4.4.1.4 Procedures

1. The EMS is managed by the Manager, EMS, who works with the Facilities, Environment and Site Safety Division (FESSD) to develop the organizational structure of the EMS, as well as determining the responsibilities of all ASD employees. Separate teams may be formed to evaluate particular groups of ASD's products, activities and services in order to produce the most efficient environmental objectives and targets. The FESSD may call upon other individuals in the organization, as needed.
2. ASD Management Executive has committed to providing all resources essential to the implementation and control of the EMS. These resources include human resources and specialized skills, technology and financial resources.
3. ASD Management Executive has appointed specific management representatives, the FESSD, who, irrespective of other responsibilities, have defined roles, responsibilities and authority for:
  - a) ensuring that EMS requirements are established, implemented and maintained in accordance with the ISO 14001 Standard: *Environmental Management Systems; Specifications with guidance for use;*
  - b) reporting on the performance of the EMS to ASD Management Executive for review and as a basis for improvement of the environmental management system.
4. ASD Management Executive have committed to the development, implementation and maintenance of an ISO 14001 EMS and have defined ASD's Environmental Policy (see Section 4.2).
5. The FESSD have designated the Manager, EMS as the key management representative with defined responsibilities and authority for maintaining the EMS and reporting all EMS related issues to the Division.
6. The FESSD are responsible for determining what resources (human, technical and/or financial) are required to meet the needs of the EMS. Should it be determined that the required resources fall beyond the capabilities of their immediate Division then a proposal to Management Executive would be prepared. A proposal, requesting additional resources, to Management Executive is presented by the Chief, FESSD. Management Executive reviews the proposal and responds accordingly. Should their response directly effect one or more particular divisions and their employees they

would be informed by their respective Director(s). A visual depiction of ASD's EMS organizational structure can be found in the **ASD EMS Directives Manual**.

7. The organizational structure of all ASD employees are controlled, in the form of graphical flow charts, by the Director General's Project Manager. Any EMS issue relating to internal structure and responsibility, which can not be determined from the organizational chart located in the Directives Manual, should be referred to these organizational charts.
8. The Manager, EMS uses the **ASD Environmental Training and Responsibility Database** to document and track each ASD employees training requirements and responsibilities in regards to the EMS.
9. The **ASD Environmental Training and Responsibility Database** documents all environmental training requirements and responsibilities applicable to ASD employees.
10. This procedure is included as part of both the Internal EMS Audit and Management Executive Review (see **Section 4.5.4 and 4.6**). The Audit and Review provide the platform for the continual improvement of this procedure should it require amendments.

## 4.4.2 EMS Training, Awareness and Competence

The following section conforms to sub-clause 4.4.2 **Training, awareness, and competence**, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

### 4.4.2.1 Purpose

The purpose of this procedure is to define the process followed by ASD in identifying, supplying and tracking all environmental training needs for personnel whose work may create a significant impact upon the environment.

### 4.4.2.2 Scope

This procedure applies to each administrative level associated with the identification, conduction and tracking of ASD employees' environmental training, awareness and competence requirements.

### 4.4.2.3 General

ASD requires that employees or members at each relevant function and level are aware of:

- the importance of conformance with the environmental policy and procedures and with the requirements of the environmental management system;
- the significant environmental impacts, actual or potential, of their work activities and the environmental benefits of improved personnel performance;
- their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirements of the environmental management system, including emergency preparedness and response requirements;
- the potential consequences of departure from specified operating procedures.

ASD personnel performing the tasks which can cause significant environmental impacts shall be competent on the basis of appropriate education, training and/or experience.

The ASD **Environmental Training and Responsibility Database** is used to document and track the training, awareness and competence of all ASD employees, as determined by the EMS.

### 4.4.2.4 Procedures

1. The Facilities, Environment and Site Safety Division (FESSD) are responsible for identifying, supplying and tracking all environmental training needs for personnel whose work may create a significant impact on the environment.

2. The ASD Management Executive are responsible for supplying, to the FESSD, the resources required to meet all requirements associated with this procedure.
3. The Manager, EMS is responsible for the monitoring and maintenance of the **ASD Environmental Training and Responsibility Database**. This electronic database is designed to track ASD employees' responsibilities and training, awareness and competence requirements in regards to the EMS. Specific information detailing the database and its functions (i.e. data entry, reports, tracking etc.) can be found in the database's help files.
4. The FESSD are responsible for assuring that all ASD employees have received EMS awareness training. This training comes in the form of in class seminars and details the requirements of the ASD EMS, including the Environmental Policy.
5. Applicable ASD employees shall receive additional awareness training, explaining their roles and responsibilities, in the following areas:
  - the Environmental Policy;
  - the significant aspects, actual or potential, associated with their activities;
  - maintaining compliance with legal requirements;
  - the set environmental objectives and targets;
  - environmental management programs;
  - emergency preparedness and response;
  - the potential consequences of departure from specified operating procedures; and
  - any other training requirements that are identified as the EMS is developed and implemented.
6. This procedure is included as part of both the Internal EMS Audit and Management Executive Review (see Section 4.5.4 and 4.6). The Audit and Review provide the platform for the continual improvement of this procedure should it require amendments.

### 4.4.3 Internal EMS Communications

The following section conforms to sub-clause 4.4.3 **Communication**, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

#### 4.4.3.1 Purpose

The purpose of this procedure is to define the process followed by ASD ensuring effective and timely communication of environmentally-related information within the organization.

#### 4.4.3.2 Scope

This procedure applies to any internal communications of the various elements of ASD's EMS.

#### 4.4.3.3 General

There are several different methods used for internal communication of environmentally-related issues. The effectiveness of these communication processes are evaluated regularly, through environmental training programs, internal audits and inspections, FESSD meetings, and the **Management Executive EMS Review**.

Major topics of internal communication include, but are not limited to:

- environmental policy;
- environmental objectives and targets;
- environmental management programs, roles and responsibilities;
- EMS directives;
- EMS procedures;
- EMS operational controls; and
- EMS records (spill reports, training records, etc.).

#### 4.4.3.4 Procedure

1. It is the responsibility of the Manager, EMS to report to the Facility, Environment and Site Safety division (FESSD) all EMS related materials i.e. questions, comments, EMS directives and procedures, environmental performance etc.
2. The Manager, EMS is responsible for communicating all EMS related materials to the different levels of ASD. Methods of delivery include, but are not limited to:
  - e-mail;
  - notice bulletins;

- internal memos;
  - brown bag seminars; and
  - training and awareness sessions.
3. It is the responsibility of each member of the FESSD to report to the Division regarding their individual EMS roles and responsibilities i.e. progress with environmental objectives and targets, environmental management programs, environmental performance etc.
  4. Individual members of the FESSD report EMS related material to the FESSD at their Division meetings, held on Thursday of every second week. EMS issues are discussed amongst the Division members and appropriate actions taken.
  5. It is the responsibility of each member of the Chief, FESSD to report to ASD Management Executive any EMS related material requiring their commitment and/or approval.
  6. The Chief, FESSD reports EMS related material to the ASD Management Executive at Management Executive meetings, held on Wednesdays every week. EMS issues are discussed amongst the Management Executive members and appropriate actions taken.
  7. It is the responsibility of the ASD Management Executive to provide ASD employees with the results of their EMS Management Executive Review. It is also their responsibility to review and provide comments to the FESSD on appropriate EMS documentation.
  8. It is the responsibility of all ASD employees to present all EMS related comments and questions to the Manager, EMS for appropriate action.
  9. This procedure is included as part of both the Internal EMS Audit and Management Executive Review (see Section 4.5.4 and 4.6). The Audit and Review provide the platform for the continual improvement of this procedure should it require amendments.

## 4.4.4 External EMS Communications

The following section conforms to sub-clause 4.4.3 **Communication**, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

### 4.4.4.1 Purpose

The purpose of this procedure is to define the process followed by ASD in establishing a process for communication with external parties/organizations regarding the EMS.

### 4.4.4.2 Scope

This procedure applies to any external communications of the various elements of ASD's EMS.

### 4.4.4.3 General

There are numerous techniques available to ensure effective communication with external parties. These techniques include regulatory filings, open houses, the media, and informal discussions with regulators, community representatives, and local business leaders.

To gain insight from the opinions of external parties, additional mechanisms such as surveys, community advisory panels, newsletters, or informal meetings can be utilized. General guidelines for external communications require that the information provided be:

- comprehensible and adequately explained to the recipient(s); and
- presented in an accurate and verifiable manner consistent with the EMS, the environmental performance and other related environmental matters.

### 4.4.4.4 Procedure

1. Inquiries and other communications from external parties concerning the EMS or environmental performance may be received by a number of representatives including ASD Management Executive, the Manager, Environmental Protection, the Manager, EMS, and the Manager, Human Resources, among others. The appropriate response should be determined through the revision of all relevant communications by ASD Management Executive.
2. It is the responsibility of the Manager of Environmental Protection to communicate with the different regulatory agencies and retain a record of all such communications, both incoming and outgoing. The Manager of Environmental Protection must also maintain copies of all other communications on environmental matters and the ASD's

response to them. All records of external communications are maintained as discussed in document management.

3. When needed or desired, the views of external parties on the EMS, the environmental performance or other environmental matters may be requested. In particular, when significant changes are being considered which may alter the actual or potential environmental impacts of ASD products, activities or services.
4. It is the responsibility of Management Executive, as part of the **Management Executive EMS Review**, to include the evaluation of communications with external parties and the need for contributions from external parties in the future. The EMS Management Executive Review process also ensures that all external communications are being carried out effectively and efficiently.
5. If external communication is required concerning a hazard or emergency response situation the documented procedure found in the ASD's Environmental Emergency Response Plan will be followed.
6. All external EMS communications are done so in conformance with the Transport Canada (TC) departmental standard for external communications (see **TC departmental EMS Manual**).
7. This procedure is included as part of both the Internal EMS Audit and Management Executive Review (see **Section 4.5.4 and 4.6**). The Audit and Review provide the platform for the continual improvement of this procedure should it require amendments.

## 4.4.5 EMS Document Control

The following section conforms to sub-clause 4.4.5 Document Control, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

### 4.4.5.1 Purpose

The purpose of this procedure is to define the process followed by ASD in establishing a method for the review, distribution, and implementation of documents that describe and control the EMS.

### 4.4.5.2 Scope

This procedure applies to the control of all ASD EMS related documentation.

### 4.4.5.3 General

A well defined records management and control system is an essential component of an effective EMS. EMS documentation promotes employee awareness of what is required to achieve an effective EMS and enables the evaluation of the system and environmental performance.

### 4.4.5.4 Procedure

It is the responsibility of the Manager, EMS to:

1. determine the distribution of EMS documents;
2. ensure obsolete documents are immediately eliminated from all points of issue and use;
3. review and approve any changes to EMS documentation;
4. ensure that revisions to EMS documents are understood, distributed and communicated to affected areas of ASD;
5. establish and maintain an EMS document index where all EMS documents are listed and all dates of any revisions and reviews are noted;
6. distribute new and revised procedures, referring to the distribution list;
7. receiving requests for inclusion on the EMS documentation distribution list and ensuring the validity of the request and updating the distribution list;

8. the modification and documentation of process - or activity - specific procedures;
9. All recipients of controlled documents are responsible for their safekeeping.
10. All EMS documents will be reviewed once every two years, unless otherwise specified. This review will examine the effectiveness and applicability of a document, ensuring that the document conforms to ISO 14001 and departmental requirements.
11. This procedure is included as part of both the **Internal EMS Audit and Management Executive EMS Review** (see Section 4.5.4 and 4.6). The Audit and Review provide the platform for the continual improvement of this procedure should it require amendments

## 4.4.6 Environmental Operational Controls

The following section conforms to sub-clause 4.4.6 **Operational control**, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

### 4.4.6.1 Purpose

The purpose of this procedure is to define the process followed by ASD in identifying and documenting those operations and activities that require EMS Operational Control procedures.

### 4.4.6.2 Scope

This procedure applies to those ASD operations which have identified significant environmental aspects associated with them.

### 4.4.6.3 General

Operational control procedures are established and maintained to ensure that ASD's Environmental Policy, and environmental objectives and targets can be met.

All ASD EMS operational controls are listed in the **ASD EMS Operational Control Manual**. This manual acts as a 'road map' to all operational procedures and controls related to the identified significant environmental aspects.

### 4.4.6.4 Procedures

1. The EMS is managed by the Manager, EMS, who works with the Facilities, Environment and Site Safety Division (FESSD) in identifying and documenting all operational controls required by the EMS. Separate teams may be formed to evaluate particular groups of ASD's products, activities and services in order to produce the most efficient operational controls. The FESSD may call upon other individuals in the organization, as needed.
2. Once ASD significant environmental aspects have been determined (see **Section 4.3.1**), operational control requirements are identified by the Manager, EMS.
3. The Manager, EMS is responsible for evaluating all existing ASD operational procedures and controls. Based on this evaluation, the Manager, EMS must determine if these procedures and controls conform to ASD EMS requirements. If it is determined that they do not conform, the Manager, EMS must coordinate the development of new procedures and controls that meet the requirements of the ASD EMS.

4. If no operational procedures or controls exist for an identified significant environmental aspect, it is the responsibility of the Manager, EMS to ensure that all ASD EMS requirements are met. Working with the FESSD and personnel from the particular operational area, suitable operational procedures or controls will be developed.
5. An inventory of all operational procedures and controls is kept in the **ASD EMS Operational Control Manual**, maintained by the Manager, EMS. This manual lists the following information about all EMS operational procedures and controls:
  - the significant environmental aspects and their applicable procedures or controls;
  - the manual in which the procedure or control can be found;
  - the location of this manual; and
  - who is responsible for the particular procedures and controls.
6. As more ASD environmental aspects are determined to be significant, new operational procedures and controls will be added to the **ASD EMS Operational Controls Manual**.
7. The FESSD are responsible for notifying all ASD employees of any EMS operational procedures and controls related to their operations. The FESSD are also responsible for ensuring that these any operational procedures and controls are being followed. The FESSD ensures this by periodically auditing and inspecting those operations with applicable significant environmental aspects.
8. This procedure is included as part of both the **Internal EMS Audit and Management Executive EMS Review** (see Section 4.5.4 and 4.6). The Audit and Review provide the platform for the continual improvement of this procedure should it require amendments

## 4.4.7 Environmental Emergency Response Plan

The following section conforms to sub-clause 4.4.7 **Emergency preparedness and response**, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

### 4.4.7.1 Purpose

The purpose of this procedure is to define the process followed by ASD in identifying potential for and responding to accidents and emergency situations, and for preventing and mitigating the environmental impacts that may be associated with them.

### 4.4.7.2 Scope

This procedure applies to all ASD operations included in the **ASD Emergency Response Plan**.

### 4.4.7.3 General

The Manager, Environmental Protection and Manager, Site Safety and Support are responsible for developing, implementing, maintaining, reviewing, revising and periodically testing the **ASD Emergency Response Plan (ERP)**.

The **ASD ERP** can be found in the **ASD Emergency Response Plan Manual**. Copies of this manual are maintained by members of the FESSD. Any training required by the **ASD ERP**, such as spill response and fire exit, are supplied by the Manager, Environmental Protection and Manager, Site Safety and Support.

The **ASD ERP** meets all legal requirements and have been developed in accordance with the ISO 14001 Standard: *Environmental Management Systems - Specification with guidance for use*.

### 4.4.7.4 Procedure

Please refer to the **ASD Emergency Response Plan Manual**.

## 4.5 Checking and Corrective Action

The planning involved in the development of the ASD EMS followed the sub-clauses of clause 4.5 (Checking and corrective action) of the ISO Standard 14001, **Environmental Management Systems - Specifications with guidance for use**. The following sub-clauses of the standard make up the planning process of the ASD EMS:

- Monitoring and measurement;
- Nonconformance and corrective and preventive action;
- Records; and
- Environmental management system audit.

### 4.5.1 Monitoring and Measurement

The following section conforms to sub-clause 4.5.1 Monitoring and measurement, of the ISO Standard 14001, **Environmental Management Systems - Specifications with guidance for use**.

#### 4.5.1.1 Purpose

The purpose of this procedure is to define the process followed by ASD for the monitoring and measurement, on a regular basis, of the key characteristics of its operations and activities that can have a significant impact on the environment.

#### 4.5.1.2 Scope

This procedure applies to all ASD operations and activities which require the monitoring and measurement of their impacts on the environment.

#### 4.5.1.3 General

Through their EMS, ASD monitors and measures the key characteristics of its operations and activities that can have a significant impact on the environment.

ASD will develop documented monitoring and measurement procedures for the following components of its EMS:

- tracking environmental legal and other requirements;
- environmental performance indicators associated with any set environmental objectives and targets, and management programs;
- the environmental training and responsibilities of ASD employees; and
- relevant operational controls.

All monitoring equipment is maintained according to each piece of equipment's specified standards.

ASD has developed, and documented in their **Compliance Audit Plan**, a procedure for the evaluation of their compliance with relevant environmental legislation and regulations.

#### 4.5.1.4 Procedure

1. The Manager, EMS is responsible for managing components of the ASD EMS which require Monitoring and Measurement. These components are as follows:
  - tracking environmental legal and other requirements;
  - environmental performance indicators associated with any set environmental objectives and targets, and management programs;
  - the environmental training and responsibilities of ASD employees;
  - relevant operational controls;
  - compliance with relevant environmental legislation and regulations.
2. The Manager, EMS and Manager, Environmental Protection are responsible for identifying and tracking relevant environmental legal and other requirements (see Section 4.3.2). The Assistant, EMS maintains a list of all applicable environmental legal and other requirements. This list is distributed to both the Manager, EMS and Manager, Environmental Protection.
3. Environmental Management Programs are developed to help meet the set Environmental Objectives and Targets. Each program has a strategy and action plan to help meet the specific targets. Records are maintained, detailing the programs' progress toward the specific targets.
4. Environmental Management Programs may also include the monitoring and measurement of an environmental aspect. For instance a Tank Management Program would include the monitoring of any leaks and the measurement of tank content levels. These details are documented within each individual program file.
5. The Manager, EMS is responsible for the management of all Environmental Objective, Target and Program monitoring and measurement.
6. The Manager, EMS is responsible for monitoring the environmental training and responsibilities of all ASD employees. This function is carried out with the help of the **ASD Environmental Training and Responsibility Database**. The Manager, EMS and Manager, Environmental Protection are responsible for the delivery of all environmental training at ASD.

7. The Manager, EMS is responsible for any monitoring and measurement programs associated with the EMS operational controls. The Manager, EMS may require the aid of other members of the FESSD, and the participation of other ASD employees, to help ensure ASD operations are conforming to documented operational procedures and controls.
8. The Manager, EMS and Assistant, EMS are responsible for developing, conducting and documenting the results of a compliance assurance procedure for ASD. All relevant environmental legal and other requirements are checked against regulations and other standards to ensure compliance. The **ASD Compliance Audit Plan** documents how the organization determines the status of compliance between their operations and regulations. The Manager, EMS is responsible for communicating documented results of compliance audits to the Manager, Environmental Protection and the Chief, FESSD. The Chief, FESSD is then responsible for communicating these results to ASD Management Executive.
9. This procedure is included as part of both the **Internal EMS Audit and Management Executive EMS Review** (see **Section 4.5.4 and 4.6**). The Audit and Review provide the platform for the continual improvement of this procedure should it require amendments.

## 4.5.2 Nonconformance & Corrective & Preventive Action

The following section conforms to sub-clause 4.5.2 **Nonconformance and corrective and preventive action**, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

### 4.5.2.1 Purpose

The purpose of this procedure is to define the process followed by ASD in defining responsibility and authority for handling and investigating nonconformance and the potential and/or actual need for corrective and/or preventive actions.

### 4.5.2.2 Scope

This procedure applies to any situation where preventive or corrective actions are initiated for environmental problems, or when a nonconformance with the EMS has been identified.

### 4.5.2.3 General

A nonconformance with the ASD EMS refers to a deficiency in the EMS. Nonconformance can be identified through monitoring, measuring, audits, and other reviews of the EMS. A corrective or preventive action is issued to correct the identified nonconformance.

Corrective action is a reactive process used to address problems after they have occurred. Corrective action is initiated using internal notices as the first step of communication. A Corrective Action may be required following a number of events, including internal EMS audits and Management Executive EMS Reviews. Results of monitoring and measurement may result in corrective action as well.

Preventive action is a proactive process intended to prevent potential problems before they occur or become more severe. To identify and address negative trends before they become significant is a focus of preventive action. A Preventive Action can be initiated by monitoring and measurement, trends analysis, tracking of progress on achieving objectives and targets, response to emergencies, complaints from interested parties, etc.

### 4.5.2.4 Procedure

The Manager. EMS is responsible for the following;

1. reviewing issues affecting the EMS;

2. developing and implementing any updates to EMS documents affected by any preventive and/or corrective action;
  3. the overall tracking and reporting on preventive and corrective actions to the Facilities, Environment and Site Safety Division (FESSD) and any applicable ASD employees; and
  4. ensuring that corrective and preventive action are implemented and are effective.
5. Any ASD employee may request a corrective or preventive action notice. The employee requesting the notice is responsible for ensuring the problem is brought to the attention of the Manager, EMS. The Manager, EMS is responsible for determining whether corrective or preventive action is appropriate. The recipient assigned a preventive or corrective action notice is responsible for resolving the problem. The Manager, EMS, working with the recipient, determines an appropriate due date for resolution.
  6. The corrective or preventive action notice is issued to the recipient, who is responsible for the investigation and resolution of the problem. Communicating the corrective or preventive action taken to the Manager, EMS, is also the obligation of the recipient.
  7. If the recipient cannot resolve the problem in an allotted time frame, determination with the Manager, EMS of the next course of action or new time frame is required.
  8. Corrective or preventive action notices whose resolution dates are overdue are presented at the next Facilities, Environment and Site Safety Division (FESSD) meeting by the Manager of Environmental Protection. The FESSD determine solutions for the situation and notify all applicable parties. A record of the incident is maintained by the Manager, EMS in the **ASD EMS Records Manual**.
  9. Records of notices are maintained for at least two years after completion of the corrective or preventive action.
  10. Nonconformance identified through monitoring, measurement, audits or Management Executive EMS Reviews are the responsibility of the Manager, EMS. The Manager, EMS is required to correct the nonconformance, report this action, and all results, to the FESSD and ASD Management Executive.
  11. This procedure is included as part of both the **Internal EMS Audit and Management Executive EMS Review (see Section 4.5.4 and 4.6)**. The Audit and Review provide

the platform for the continual improvement of this procedure should it require amendments.

### 4.5.3 Environmental Records

The following section conforms to sub-clause 4.5.3 Environmental Records, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

#### 4.5.3.1 Purpose

The purpose of this procedure is to define the process followed by ASD for the identification, maintenance and disposal of environmental records.

#### 4.5.3.2 Scope

This procedure applies to any environmental record used by ASD.

#### 4.5.3.3 General

All ASD environmental records are documented in the **ASD EMS Records Manual**. ASD environmental records are legible, identifiable and traceable to the activity, product or service involved. ASD environmental records are stored in paper base format in the **ASD EMS Records Manual**, where possible records are stored electronically.

#### 4.5.3.4 Procedure

1. It is the responsibility of the Manager of Environmental Protection to:
  - maintain, store and make accessible all ASD environmental records;
  - ensure that ASD environmental records are readily retrievable and protected against damage, deterioration or loss; and
  - maintain the **ASD EMS Records Manual**.
2. The retention time of individual environmental records is identified in the **ASD EMS Records Manual**.
3. Environmental records are maintained, as appropriate to the system and to ASD, to demonstrate conformance to the requirements of the ISO 14001 Standard: *Environmental Management Systems - Specification with guidance for use*.
4. Detailed procedures, including responsibilities, method of delivery, purpose, identification and maintenance of, and other relationships to ASD EMS for each ASD environmental record can be found in the **ASD EMS Records Manual**.

## 4.5.4 Internal EMS Audit

The following section conforms to sub-clause 4.5.4 **Environmental management system audit**, of the **ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use.***

### 4.5.4.1 Purpose

The purpose of this procedure is to define the process followed by ASD when conducting internal audits of the EMS.

### 4.5.4.2 Scope

This procedure applies to the process of internally auditing the ASD EMS.

### 4.5.4.3 General

ASD conducts periodical internal audits of their EMS using the **ASD Internal EMS Audit Protocol**.

The purpose of these internal EMS audits is to determine whether or not the ASD EMS: conforms to ASD's planned arrangements for environmental management, including the requirements of the **ISO Standard 14001: *Environmental Management System - Specification with guidance for use;*** and has been properly implemented and maintained.

All **Internal EMS Audit** results are reported, by the FESSD, to ASD Management Executive as part of their EMS Review.

### 4.5.4.4 Procedure

1. The FESSD are responsible for conducting all internal EMS audits, developing the final audit report, and reporting results to Management Executive as part of the **Management Executive EMS Review**.
2. The FESSD use the following documents as guidance tools when conducting an internal audit:
  - ISO 14010: *Guidelines for Environmental Auditing - General Principles on Environmental Auditing;*
  - ISO 14011: *Guidelines for Environmental Auditing - Audit Procedures for Environmental Management Systems;* and

- ISO 14012: Guidelines for Environmental Auditing - *Qualification Criteria for Environmental Auditors*.
3. For each internal EMS audit, the FESSD are responsible for developing and documenting the audit objectives, scope and schedule. This information will be submitted to all relevant ASD personnel two weeks prior to an internal audit.
  4. The FESSD follow the **ASD Internal EMS Audit Protocol**, developed by the Manager, EMS, for all internal EMS audits.
  5. The **ASD Internal Audit Protocol** and the above listed standards are maintained by the Manager, EMS.
  6. All internal EMS audit evidence and results are documented and maintained, by the Manager, EMS, as Environmental Records (see **Section 4.5.3**).
  7. ASD internal EMS audits are conducted once a year. Different sections of the ASD EMS may be internally audited at different times depending on the schedules of all people involved.
  8. This procedure and the **Internal EMS Audit Protocol** are themselves included as part of both the **Internal EMS Audit and Management Executive EMS Review** (see **Section 4.5.4 and 4.6**). The Audit and Review provide the platform for the continual improvement of this procedure should it require amendments.

## 4.6 Management Executive EMS Review

The following section conforms to clause 4.6 Management review, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

### 4.6.1 Purpose

The purpose of this procedure is to define the plan and focal points to be included in the EMS Review by ASD Management Executive.

### 4.6.2 Scope

This procedure applies to all Management Executive EMS Reviews conducted.

### 4.6.3 General

The Management Executive EMS Review process is intended to provide the setting for discussion and improvement of the EMS. Any necessary changes to the EMS to better achieve set goals are made through the Management Executive EMS Review process.

### 4.6.4 Procedure

1. It is the responsibility of the Facilities, Environment and Site Safety Division (FESSD) to schedule and conduct the Management Executive EMS Review meetings at periodic intervals. Prior to the meeting, the FESSD are obligated to secure the collection of any required information or data.
2. Each Management Executive EMS Review meeting will include, at a minimum, each the following:
  - the relevance, adequacy and effectiveness of the environmental policy;
  - the suitability, sufficiency and effectiveness of the environmental objectives;
  - the overall suitability, adequacy and efficacy of the EMS;
  - the status of corrective and preventive actions;
  - the details of any EMS audits conducted since the last Management Executive EMS Review meeting;
  - the suitability, adequacy and effectiveness of training efforts;
  - the possibility of changing circumstances and the commitment to continual improvement; and,
  - the results of any action items from the previous Management Executive EMS Review meeting.

3. Minutes of the Management Review meeting will be recorded. These meeting minutes will include a list of attendees, a summary of key issues discussed and any action items arising from the meeting.
4. A copy of the meeting minutes will be kept on file and also distributed to attendees and any individuals assigned action items.
5. A **Management Executive EMS Review** will be held once a year, following the conduction of the **ASD Internal EMS Audit**.
6. This **Management Executive EMS Review** procedure and the entire process as a whole will be examined as part of the **Internal EMS Audit**. The Audit and Review provide the platform for the continual improvement of this procedure should it require amendments.

Aircraft Services Directorate  
Environmental Management System  
Directives Manual

January 12, 2000  
Version 2.1

This page was intentionally left blank

# Table of Contents

<b>1.0 PURPOSE</b>	<b>1</b>
1.1 Aircraft Services Directorate Description and Operations	1
1.2 Background	2
<b>2.0 AIRCRAFT SERVICES DIRECTORATE EMS</b>	<b>4</b>
2.1 EMS Definitions and Acronyms	4
2.2 Environmental Policy	4
2.4 ASD Organizational Structure for Environmental Management	6
2.5 Roles and Responsibilities	6
2.5.1 Director General and Management Executive	6
2.5.2 Facility, Environment and Site Safety Division	7
2.5.3 Manager, Environmental Management System	7
2.5.4 Manager of Environmental Protection	7
2.5.5 ASD Employees	7
<b>4.0 ENVIRONMENTAL MANAGEMENT SYSTEM</b>	<b>9</b>
4.1 General Requirements	9
4.2 Environmental Policy	10
4.2.1 Purpose	10
4.2.2 Responsibility	10
4.2.3 Directive	10
4.3 Planning	11
4.3.1 Environmental Aspects	11
4.3.1.1 Purpose	11
4.3.1.2 Responsibility	11
4.3.1.3 Directive	11
4.3.2 Legal and other requirements	13
4.3.2.1 Purpose	13
4.3.2.2 Responsibility	13
4.3.2.3 Directive	13
4.3.3 Objectives and Targets	14
4.3.3.1 Purpose	14
4.3.3.2 Responsibility	14
4.3.3.3 Directive	14
4.3.4 Environmental Management Programs	16
4.3.4.1 Purpose	16
4.3.4.2 Responsibility	16
4.3.4.3 Directive	17
4.4 Implementation and Operation	18
4.4.1 Structure and Responsibility	18
4.4.1.1 Purpose	18
4.4.1.2 Responsibility	18
4.4.1.3 Directive	19
4.4.2 Training, Awareness, Competence	20
4.4.2.1 Purpose	20
4.4.2.2 Responsibility	20

4.4.2.3 Directive	20
<b>4.4.3 Communication</b>	<b>22</b>
4.4.3.1 Purpose	22
4.4.3.2 Responsibility	22
4.4.3.3 Directive	22
4.4.4 Environmental Management System Documentation	23
4.4.4.1 Purpose	23
4.4.4.2 Responsibility	23
4.4.4.3 Directive	23
4.4.5 Document Control	24
4.4.5.1 Purpose	24
4.4.5.2 Responsibility	24
4.4.5.3 Directive	24
4.4.6 Operational Control	25
4.4.6.1 Purpose	25
4.4.6.2 Responsibility	25
4.4.6.3 Directive	25
4.4.7 Emergency Preparedness and Response	26
4.4.7.1 Purpose	26
4.4.7.2 Responsibility	26
4.4.7.3 Directive	26
<b>4.5 Checking and Corrective Action</b>	<b>27</b>
4.5.1 Monitoring and Measurement	27
4.5.1.1 Purpose	27
4.5.1.2 Responsibility	27
4.5.1.3 Directive	27
4.5.2 Nonconformance and Corrective and Preventive Action	29
4.5.2.1 Purpose	29
4.5.2.2 Responsibility	29
4.5.2.3 Directive	29
4.5.3 Records	30
4.5.3.1 Records	30
4.5.3.2 Responsibility	30
4.5.3.3 Directive	30
4.5.4 Environmental Management System Audit	31
4.5.4.1 Purpose	31
4.5.4.2 Responsibility	31
4.5.4.3 Directive	31
<b>4.6 Management Review</b>	<b>32</b>
4.6.1 Purpose	32
4.6.2 Responsibility	32
4.6.3 Directive	32

## 1.0 PURPOSE

This document is the Environmental Management System (EMS) Directives Manual for the Aircraft Services Directorate (ASD) located at 58 Service Road, Gloucester, Ontario. The purpose of this manual is to provide a reference document to Aircraft Services staff, particularly to staff who have environmental responsibilities, on the directives associated with each component of the ASD EMS.

### 1.1 AIRCRAFT SERVICES DIRECTORATE DESCRIPTION AND OPERATIONS

Aircraft Services provides aircraft maintenance and support services to Transport Canada (TC) as well as other federal government departments and agencies. This includes the provision of professional training for TC and Transportation Safety Board pilots and ASD aircraft maintenance engineers and electronics technicians.

The directorate headquarters at the MacDonald-Cartier International Airport, in Ottawa, is comprised of the following branches and division;

- Flight Operations Branch
- Technical Services Branch
- Training Branch
- Engineering Branch
- Client and Internal Services Branch
- Aviation Safety Division

The Aircraft Services hanger, building T-58, at the airport is the administrative and operational headquarters for the ASD. It accommodates approximately 220 employees and fifteen aircraft. The Hanger includes the following operational areas: ;

- flight operations/dispatch office;
- parts warehouse;
- avionics electrical maintenance;
- instrument and electrical shops;
- component overhaul shop;
- technical library and records office;
- machine and hydraulic shops;
- paint shop;
- carpentry shop;
- battery shop;
- upholstery shops; and
- non-destructive testing shop for the testing of aircraft parts and equipment.

It also includes an administration area for;

- senior management;
- inspection;
- finance;
- planning;
- purchasing;
- personnel;
- facilities;
- informatics;
- dangerous goods and environmental protection;
- central records; and
- inventory management.

The Aircraft Services Training Centre, building O-276, is located adjacent to the Hanger. The training centre conducts courses for Transport Canada's civil aviation inspectors, aircraft maintenance engineers and avionics and electronic technicians. The facility which opened in 1991, includes five classrooms, administration offices, a boardroom, a library, a staff/student lounge and a large bay which houses two flight simulators. The flight simulators are a Cessna Citation II full flight simulator and a King Air 90/100 Flight Training Device. The Training Centre staff also develops training calendars, technical manuals, computer based course material and course presentation packages with multi-media equipment such as graphics design equipment, computers, VCRs, monitors, cameras and colour photocopiers.

## 1.2 BACKGROUND

In 1998, under direction from federal government policy, TC committed to the development of an EMS based on the ISO 14000 Standards and the federal government policy "A Guide to Green Government". TC developed an EMS and is committed to implementing effective environmental management throughout the department. This process is fundamental to the integration of environmental considerations into daily decision-making and to meeting the objectives of sustainable development as detailed in the departmental *Sustainable Development Strategy (SDS)*. The goal of the EMS is to produce a departmental framework, continually monitored and periodically reviewed, and to provide direction to the department's environmental activities.

TC's environmental policy drives the department's EMS. The policy states:

Transport Canada is committed to making sustainable development a fundamental principle of policy development, transportation safety regulation and program delivery, and to ensuring that all of its operations are conducted in an environmentally responsible manner.
--

This policy is linked to TC's Vision, and Mission:

<b>Vision:</b>	The Best Possible Transportation for Canada and Canadians.
<b>Mission:</b>	To develop and administer policies, regulations and services for the best possible transportation system.

This policy statement is published and as such is a public statement reflecting the commitment of the Department to sound environmental practices. It forms the basis for Aircraft Services commitment to sustainable development and with respect to our operations, its commitment to an EMS.

As TC shifts from an operational department to that of a landlord and regulator, remaining business centres will be responsible for meeting the requirements of a departmental EMS.

## 2.0 AIRCRAFT SERVICES DIRECTORATE EMS

Aircraft Services Directorate (ASD) has committed to the development of an EMS based on the International Organization for Standardization (ISO) 14000 standard series. The implementation of an EMS at ASD is fundamental to the TC goal of integrating environmental considerations into daily decision making and to meeting the objectives of sustainable development. EMS is an organizational framework, continually monitored and periodically reviewed, to provide direction for an organization's environmental activities.

The ASD EMS Directives Manual is the first of four levels of EMS documentation. The other three levels are as follows;

- ASD EMS Procedures Manual;
- ASD EMS Operational Control Manual; and
- ASD EMS Records Manual.

This directives manual is a starting point. A primary objective is to provide education and insight to all ASD employees into the concept and characteristics of the EMS. With a common understanding, ASD can then begin to address the specific recommendations contained in this document and work to further develop the EMS.

### 2.1 EMS DEFINITIONS AND ACRONYMS

The following acronyms are used throughout this document.

EMS = Environmental Management System

MEP = Manager of Environmental Protection

MSS = Manager of Site Safety

MFE = Manager of Facilities Engineering

CFESS = Chief of Facilities, Environment and Site Safety

DG = Director General

ME = Management Executive

FESSD = Facilities, Environment and Site Safety Division

ESO = Environmental Support Officer (Student)

### 2.2 ENVIRONMENTAL POLICY

The Director General (DG) of ASD, Management Executive (ME) and the entire staff are committed to both the ASD Mission and environmental policy.

The environmental policy is linked to Aircraft Services Mission:

<b>Mission:</b>	Aircraft Services is responsible for the provision of aircraft and services in support of Transport Canada operations, as well as, selected programs of other federal government departments and agencies.
-----------------	--

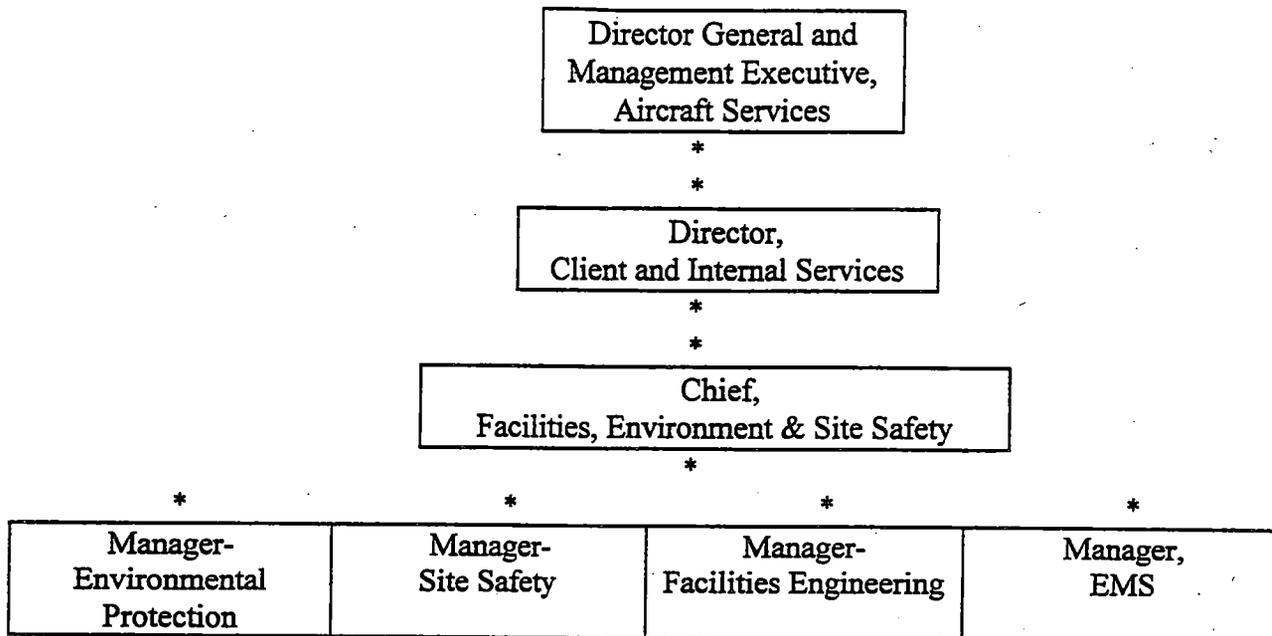
Aircraft Services Directorate Headquarters environmental policy states:

**In keeping with Transport Canada's commitment to sustainable development, the Aircraft Services Directorate will incorporate environmental considerations into all of its business decisions.**

In order to incorporate environmental considerations into all of its business decisions, ASD will develop, implement and maintain an environmental management system (EMS) following the principles of the International Organization for Standardization (ISO) 14001 standard and will:

- meet, or exceed where possible, the letter and spirit of all applicable environmental legislation and regulations, and other environmental requirements to which ASD subscribes;
- identify, assess the significance of, and set targets and objectives to reduce all existing and potentially significant environmental risks that are related to its operations;
- achieve all objectives and targets in a timely manner by using materials, processes, and services that prevent pollution, minimize waste, and reduce risks to human health and the environment;
- engage in an on-going process of environmental awareness training for all employees who's work and activities can have a significant impact on the environment; and
- review and continually improve ASD's environmental performance and EMS.

## 2.4 ASD ORGANIZATIONAL STRUCTURE FOR ENVIRONMENTAL MANAGEMENT



The Manager, Environmental Protection makes the final decision on all environmental issues of minor concern. Decisions which may have a major impact on the facility or the environment are discussed with Management Executive.

## 2.5 ROLES AND RESPONSIBILITIES

This section details the roles and responsibilities the key parties involved with the ASD EMS. Included below are brief descriptions of the EMS related roles and responsibilities of the following representatives:

- ASD Director General and Management Executive;
- Facility, Environment and Site Safety division;
- Manager, Environmental Management System;
- Manager, Environmental Protection; and
- ASD employees.

### 2.5.1 DIRECTOR GENERAL AND MANAGEMENT EXECUTIVE

The Director General of Aircraft Services and Management Executive are responsible for approving EMS developments and providing necessary resources, conducting a yearly review of the system and taking any required corrective actions.

## **2.5.2 FACILITY, ENVIRONMENT AND SITE SAFETY DIVISION**

The ASD Management Executive have appointed the Facilities, Environment and Site Safety Division (FESSD) responsible for the development, maintenance and continual improvement of the ASD EMS. The FESSD includes the Manager of Environmental Protection (MEP), the Manager of Site Safety (MSS), the Manager of Facilities Engineering (MFE), the Manager, EMS and EMS assistants, an Environmental Support Officer (ESO) and the Chief of Facilities, Environment and Site Safety (CFESS). The FESSD may call upon other individuals in the organization, as needed, to aid in EMS related duties.

## **2.5.3 MANAGER, ENVIRONMENTAL MANAGEMENT SYSTEM**

An environmental consultant was contracted to act as the ASD Manager, EMS. His responsibilities specifically focused on the development and implementation of the ASD EMS. The Manager, EMS was supported with three environmental university students, who aided in the varying tasks associated with the EMS development. The Manager, EMS, and environmental students, work with and report to the FESSD.

## **2.5.4 MANAGER OF ENVIRONMENTAL PROTECTION**

The Manager of Environmental Protection is responsible for maintaining the EMS through effective documentation at all levels of the ASD EMS. The Manager, Environmental Protection reports directly to the FESSD who review all EMS related information and report to Management Executive on a regular basis. All responsibilities of the Manager, EMS related to the ASD EMS were absorbed by the Manager, Environmental Protection upon completion of his contract.

## **2.5.5 ASD EMPLOYEES**

Personnel at all levels of ASD are responsible for minimizing the environmental impact(s) associated with their working operations, and for compliance with applicable environmental legislation. All ASD employees are required to follow the management endorsed EMS directives, procedures and operational controls.

This page was left intentionally blank.

## 4.0 ENVIRONMENTAL MANAGEMENT SYSTEM

This section contains a description of the EMS developed by ASD for application at the headquarters facility.

### 4.1 GENERAL REQUIREMENTS

ASD has developed, implemented and continuously improves an Environmental Management System based on the requirements of the ISO Standard 14001: *Environmental Management Systems - Specification with guidance for use*.

This EMS Directives Manual summarizes the responsibilities and directives of the organization for each element of the EMS at ASD Headquarters facility.

The Directives manual is referred to as the **ASD EMS Directives Manual**. All EMS procedures are consolidated in the **ASD EMS Procedures Manual**.

## 4.2 ENVIRONMENTAL POLICY

The Following section conforms to clause 4.2 Environmental Policy, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

### 4.2.1 PURPOSE

The purpose of this section is to document ASD's directives for the development, implementation and maintenance of their environmental policy.

### 4.2.2 RESPONSIBILITY

The ASD environmental policy was developed by the FESSD. The ASD Director General and Management Executive provided final approval of the environmental policy and all of its commitments.

All ASD employees are responsible for having a general understanding of the purpose of the ASD environmental policy and its various commitments.

### 4.2.3 DIRECTIVE

ASD's environmental policy, as approved by the ASD Director General and Management Executive, is located in **Section 2.2**. The ASD environmental policy is also located in **Section 14.0 of the ASD Policies and Procedures Manual**. It addresses the following key issues:

- ASD considered the identified significant environmental aspects and impacts of its operations, contained within the scope of the EMS, when developing the environmental policy.
- The ASD environmental policy outlines the process for continual improvement of the EMS through EMS audits and management reviews. An overall commitment to the prevention of pollution from ASD operations is also given in the environmental policy.
- The ASD environmental policy includes a commitment to comply with relevant environmental legislation and regulations, and other environmental requirements to which ASD subscribes.
- The ASD environmental policy provides the framework for the setting of specific objectives and targets, and the environmental management programs developed to help achieve them.
- The ASD environmental policy is implemented as outlined in the **ASD EMS Procedures Manual (Section 4.2)**. The environmental policy is communicated to all employees by posting in key locations, environmental training sessions or any other suitable means and is made available to the public and interested parties upon request. The environmental policy is also available through the ASD internal and external web-site.

## 4.3 PLANNING

The planning involved in the development of the ASD EMS followed the sub-clauses of clause 4.3 (Planning) of the ISO Standard 14001:1996, *Environmental Management Systems - Specifications with guidance for use*. The following sub-clauses of the standard make up the planning process of the ASD EMS:

- Identification of Environmental aspects;
- Legal and other requirements;
- Objectives and targets; and
- Environmental Management Programs.

### 4.3.1 ENVIRONMENTAL ASPECTS

The Following section conforms to clause 4.3.1 *Environmental Aspects*, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

#### 4.3.1.1 PURPOSE

The purpose of this section is to document ASD's directives for the identification and maintenance of the organization's environmental aspects and impacts, and those which prove to be significant.

#### 4.3.1.2 RESPONSIBILITY

The Manager, EMS is responsible for the identification and documentation of the ASD's environmental aspects and their associated impacts. The Manager, EMS is also responsible for determining the significance of these aspects and impacts and relating this information to the appropriate employees.

The FESSD is responsible for reviewing and authorizing the final list of significant aspects.

#### 4.3.1.3 DIRECTIVE

The procedure used to identify ASD's environmental aspects and their associated impacts can be found in the *Initial Environmental Review - Environmental Aspects* and the *ASD EMS Procedures Manual* (Section 4.3.1).

The procedure used to determine the significance of all identified environmental aspects and impacts can be found in the *ASD Environmental Aspects Significance Report*.

Environmental aspects, and their associated impacts, are identified for all of the ASD's activities, products, services and operations.

The environmental aspects and impacts are documented and revised as:

- new legislation comes into force;
- existing operations at the facility are altered;
- new operations are adopted; or
- as changes to other related requirements occur.

The significance of the environmental aspects and impacts are determined using a numerical value matrix, where the aspects were graded against a set of selected criteria. Those aspects which proved to be significant provided the basis for the setting of environmental objectives and targets. The methods used to determine significance can be found in the **ASD EMS Environmental Aspects Significance Report**.

## **4.3.2 LEGAL AND OTHER REQUIREMENTS**

The Following section conforms to sub-clause 4.3.2 **Legal and other requirements**, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

### **4.3.2.1 PURPOSE**

The purpose of this section is to document ASD's directives for developing and maintaining a procedure to identify environmental regulatory and voluntary requirements applicable to its activities, products, services, and operations, and having access to these documents.

### **4.3.2.2 RESPONSIBILITY**

The Manager, EMS, Manager, Environmental Protection and the Environmental Support Officer are responsible for identifying, tracking and communicating ASD environmental legal requirements.

### **4.3.2.3 DIRECTIVE**

The procedure used to identify and track all environmental legal and other requirements applicable to ASD can be found in the **ASD EMS Procedures (Section 4.3.2)** and the **ASD Identification and Tracking of Environmental Legal Requirements Report**.

The Environmental Support Officer maintains the list of all environmental legal requirements applicable to ASD. This list is kept in both electronic and paper form and is available to each ASD employee upon request.

Changes to existing regulations or the addition of new regulations are monitored and communicated to the appropriate employees.

Applicable regulatory and voluntary requirements provide one of the key components in determining the significance of ASD's environmental aspects and impacts. The methods used to determine significance can be found in the **ASD EMS Environmental Aspects Significance Report**.

### **4.3.3 OBJECTIVES AND TARGETS**

The Following section conforms to sub-clause 4.3.3 Objectives and targets, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

#### **4.3.3.1 PURPOSE**

The purpose of this section is to document ASD's directives for establishing and maintaining documented environmental objectives and targets.

#### **4.3.3.2 RESPONSIBILITY**

The Manager, EMS is responsible for evaluating the identified significant environmental aspects and impacts, and then proposing appropriate environmental objectives and targets based on this evaluation.

The FESSD is responsible for evaluating the proposed environmental objectives and targets and recommending their approval to management.

The ASD Director General and Management Executive are responsible for evaluating, approving and providing required resources for environmental objectives and targets which meet one or more of the following criteria:

- Require funds which fall outside of the FESSD's set budget;
- Have the potential to effect or alter current ASD operating practices; and/or
- Involve or effect the operations of interested parties working on, or off, ASD property.

Proposed environmental objectives and targets which are not affected by one of the above mentioned criteria, will be approved and implemented by the FESSD.

#### **4.3.3.3 DIRECTIVE**

ASD's environmental objectives and targets are documented, maintained and communicated to effected personnel by the Manager, EMS.

The structural process for setting ASD's environmental objectives and targets is documented in the **ASD EMS Procedures Manual (Section 4.3.3)**.

Environmental objectives were formulated based on ASD's environmental policy, taking into account those environmental aspects and impacts deemed to be significant.

For each EMS objective a measurable target was set, and a time frame established for reaching the target.

As new legal and other requirements or new significant environmental aspects are identified, modifications or additions to ASD's stated environmental objectives and targets are investigated.

Once an environmental objective or target has been met the FESSD will discuss the development of a new environmental objective and target.

#### **4.3.4 ENVIRONMENTAL MANAGEMENT PROGRAMS**

The Following section conforms to sub-clause 4.3.4 Environmental management programme(s), of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

##### **4.3.4.1 PURPOSE**

The purpose of this section is to document ASD's directives for establishing and maintaining environmental management programs to achieve the set environmental objectives and targets.

##### **4.3.4.2 RESPONSIBILITY**

The Manager, EMS is responsible for proposing the development of new environmental management programs.

The members of the FESSD are responsible for the approval, then development, implementation, maintenance and monitoring of environmental management programs designed to achieve ASD's environmental objectives and targets.

Each environmental management program has a designated coordinator responsible for achieving any environmental objectives and targets related to the program. Coordinators for all environmental management programs will be members of the FESSD only.

The Manager, EMS is responsible for providing any required background information or research required for the development and implementation of an environmental management program. The Manager, EMS is also responsible for developing, documenting, maintaining and communicating to the FESSD, Strategy and Action Plan's for each environmental management program.

The ASD Director General and Management Executive are responsible for evaluating, approving and providing required resources for environmental management programs which meet one or more of the following criteria:

- Require funds which fall outside of the FESSD's set budget;
- Have the potential to effect or alter current ASD operating practices; and/or
- Involve or effect the operations of interested parties working on, or off, ASD property.

Proposed environmental management programs which are not affected by one of the above mentioned criteria, will be approved and implemented by the FESSD.

#### 4.3.4.3 DIRECTIVE

ASD's environmental management programs are documented, maintained and communicated to effected personnel by the Manager, EMS.

The structural process for developing environmental management programs designed to achieve ASD's environmental objectives and targets is documented in the **ASD EMS Procedures Manual (Section 4.3.4)**.

Environmental management programs were established to help achieve each of the ASD's environmental objectives and targets.

The means and time frame by which environmental objectives and targets are to be achieved are documented in Strategy and Action Plans for, developed for each individual program.

Should any new developments and/or new or modified activities, products, or services be adopted by ASD, which relate to an already existing environmental management program, the program affected will be amended to reflect these changes.

## 4.4 IMPLEMENTATION AND OPERATION

The planning involved in the development of the ASD EMS followed the sub-clauses of clause 4.4 (Implementation and Operation) of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*. The following sub-clauses of the standard make up the planning process of the ASD EMS:

- Structure and responsibility;
- Training, awareness and competence;
- Communication;
- Document control;
- Operational control; and
- Emergency preparedness and response.

### 4.4.1 STRUCTURE AND RESPONSIBILITY

The following section conforms to sub-clause 4.4.1 *Structure and responsibility*, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

#### 4.4.1.1 PURPOSE

The purpose of this section is to document ASD's directives for defining, documenting and communicating the roles, responsibilities and authorities of each employee in regards to the EMS.

#### 4.4.1.2 RESPONSIBILITY

The ASD Director General and Management Executive together are responsible for providing resources essential to the implementation and control of the EMS. These would include:

- the appointment of a specific representative responsible for developing and maintaining the EMS as well as reporting to the FESSD the status of the EMS;
- the provision of human resources necessary to develop and maintain the EMS; and
- the approval of the ASD's EMS Directives Manual and Environmental Policy.

The Manager, EMS is responsible for the design of ASD's EMS Directives, Procedures, Operational Controls and Records Manual. These Manuals provide the structure for the ASD EMS.

The FESSD are responsible for approving the ASD EMS Directives Manual and Environmental Policy

All ASD employees are responsible for following any EMS related Directives and Procedures which apply to their operations at ASD. Employees are also responsible for having a general knowledge of the ASD environmental policy.

The responsibilities of all ASD employees, in relation to the EMS, are documented in the **ASD Environmental Training and Responsibilities Database**. This database was developed and is maintained by the Manager, EMS.

#### **4.4.1.3 DIRECTIVE**

The general roles, responsibilities and authorities for environmental management at ASD are defined in **Section 2.5**. The procedures used to define these roles, responsibilities and authorities can be found in the **ASD EMS Procedures Manual (Section 4.4.1)**.

ASD's EMS requires effective communication among all levels of the organization. In order to efficiently communicate information, specific systems were put in place to facilitate the flow of information and ensure the management system components have competent staff responsible for the completion of tasks and activities.

ASD's EMS ensures that all personnel understand their responsibilities.

The roles and responsibilities in regards to specific environmental management programs are included in the documented Strategy and Action Plan for each program, maintained by the Manager, EMS.

The **EMS Training and Responsibilities Database** is designed to track each ASD employees' training requirements and responsibilities in regards to the EMS. Specific information pertaining to this database can be found in the software's help files.

## **4.4.2 TRAINING, AWARENESS, COMPETENCE**

The following section conforms to sub-clause 4.4.2 **Training, awareness, and competence**, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

### **4.4.2.1 PURPOSE**

The purpose of this section is to document ASD's directives for identifying the required levels of training, awareness and competence for all employees whose work may create a significant impact upon the environment, and ensuring that these requirements are addressed.

### **4.4.2.2 RESPONSIBILITY**

The Manager, Environmental Protection (MEP) and Manager, Site Safety (MSS) are responsible for identifying and tracking performance for all training requirements in regards to both site safety and environmental issues related to employee activities.

The Manager, EMS is responsible for identifying and tracking all training, awareness and competence requirements needed to conform to the ASD EMS.

All environmental training, awareness and competence requirements are documented in the **ASD EMS Training and Responsibility Database**, which is maintained by the Manager, EMS.

### **4.4.2.3 DIRECTIVE**

The structural process for developing environmental training, awareness and competence programs designed to meet the requirement of ASD's EMS is documented in the **ASD EMS Procedures Manual (Section 4.4.2)**.

ASD's EMS is designed to ensure that all employees receive appropriate training for their roles and responsibilities in achieving conformance with the environmental policy and with the overall general requirements of the EMS.

ASD maintains procedures to ensure that its employees or members whose work involves an actual or potential significant environmental aspect, receive appropriate training on:

- the actual or potential significant environmental aspects associated with their working operations;
- any environmental objectives and targets related to their working operations and the environmental management programs designed to help meet them;
- emergency preparedness and response requirements; and
- specified environmental operational procedures and the potential consequences of not following these procedures.

The **EMS Training and Responsibilities Database** is designed to track each ASD employees' training requirements and responsibilities in regards to the EMS. Specific information pertaining to this database can be found in the software's help files.

### **4.4.3 COMMUNICATION**

The following section conforms to sub-clause 4.4.3 Communication, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

#### **4.4.3.1 PURPOSE**

The purpose of this section is to document ASD's directives for internal and external communications.

#### **4.4.3.2 RESPONSIBILITY**

The Manager, EMS and Manager, Environmental Protection are responsible for all internal and external EMS related communication.

#### **4.4.3.3 DIRECTIVE**

The structural process used for internal EMS communications is documented in the ASD EMS Procedures Manual (Section 4.4.3).

The structural process used for external EMS communications is documented in the ASD EMS Procedures Manual (Section 4.4.4).

All ASD EMS information is communicated internally through e-mails, internal Web site postings, training and awareness seminars, and newsletters.

All ASD EMS information is communicated externally through the external Web site, newsletters, and official EMS reports.

The Manager, EMS is responsible for managing contact with all interested parties and organizations whose operations can enable or impede ASD's environmental performance.

#### **4.4.4 ENVIRONMENTAL MANAGEMENT SYSTEM DOCUMENTATION**

The following section conforms to sub-clause 4.4.4 EMS Documentation, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

##### **4.4.4.1 PURPOSE**

The purpose of this section is to document ASD's directives for establishing and maintaining information detailing the key elements of the EMS and any links to related documentation.

##### **4.4.4.2 RESPONSIBILITY**

The FESSD is responsible for reporting EMS documentation to the ASD Director General and Management Executive.

The Manager, EMS is responsible for the development of all EMS documentation at ASD.

The Manager, EMS and Manager, Environmental Protection are responsible for effective implementation and control of all EMS documentation at ASD.

##### **4.4.3.3 DIRECTIVE**

ASD's EMS is documented and controlled in 4 separate levels of documentation:

###### **Level 1 ASD EMS Directives Manual**

The ASD EMS Directives Manual summarizes the policies and goals associated with establishing and maintaining each of the elements which makes up the ASD ISO 14001 based EMS.

###### **Level 2 ASD EMS Procedures Manual**

The ASD EMS Procedures Manual lists the managerial and administrative procedures developed to establish and maintain each of the elements which makes up the ASD EMS.

###### **Level 3 ASD EMS Operational Controls Manual**

The ASD EMS Operational Controls Manual lists all the operational procedures developed to ensure the work processes followed to perform those activities associated with identified significant ASD environmental aspects are in line with ASD's environmental policy, objectives and targets.

###### **Level 4 ASD EMS Records Manual**

The ASD EMS Records Manual documents all environmental records kept by ASD for their EMS.

## **4.4.5 DOCUMENT CONTROL**

The following section conforms to sub-clause 4.4.5 Document Control, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

### **4.4.5.1 PURPOSE**

The purpose of this section is to document ASD's directives for effective control of EMS documentation.

### **4.4.5.2 RESPONSIBILITY**

The Manager, EMS is responsible for all EMS document control at ASD.

### **4.4.5.3 DIRECTIVE**

The structural processes used for the control of EMS documentation are documented in the ASD EMS Procedures Manual (Section 4.4.5).

It is the responsibility of the originator of an EMS document to periodically review and revise as necessary the document.

The Manager, EMS is responsible for maintaining a list of all EMS documents. This list includes;

- the name of the document;
- the version number;
- the date issued;
- the distribution list; and
- the status of EMS documents (i.e. obsolete).

The recipient of an EMS document is responsible for removing obsolete documents and labelling them appropriately should they need to be retained for legal purposes.

## 4.4.6 OPERATIONAL CONTROL

The following section conforms to sub-clause 4.4.6 Operational control, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

### 4.4.6.1 PURPOSE

The purpose of this section is to document ASD's directives for the establishment and maintenance of procedures used for all operations and activities that are associated with the identified significant environmental aspects.

### 4.4.6.2 RESPONSIBILITY

The Manager, EMS is responsible for identifying required operational control procedures.

The FESSD is responsible for developing and maintaining any required operational control procedures.

The ASD Director General and Management Executive are responsible for approving all EMS operational control procedures should they require a notable change from present operational procedures or require additional funding.

ASD employees with actual or potential significant environmental aspects identified with their working operations are responsible for effective implementation and maintenance of operational control procedures.

### 4.4.6.3 DIRECTIVE

Procedures detailing how operational control procedures are developed and where they should be developed are documented in the **ASD EMS Procedures Manual (Section 4.4.6)**.

ASD operational control procedures have been established, and are maintained, for all operations which include identified significant environmental aspects. Documented procedures for those operations where in their absence a situation could arise leading to deviations from the environmental policy and the set objectives and targets are in place.

Procedures for any purchasing and contracting requirements relating to the identified significant environmental aspects have been developed.

All operational control procedures are documented in the ASD's EMS Operational Control Manual.

## **4.4.7 EMERGENCY PREPAREDNESS AND RESPONSE**

The following section conforms to sub-clause 4.4.7 Emergency preparedness and response, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

### **4.4.7.1 PURPOSE**

The purpose of this section is to document ASD's policies for establishing and maintaining emergency response procedures.

### **4.4.7.2 RESPONSIBILITY**

The Manager, Environmental Protection and Manager, Site Safety and Support are responsible for maintaining ASD's emergency response plan (ERP).

ASD employees whose work operations have been identified as potential areas for emergency response are responsible for implementing the emergency plan on an 'as-needed' basis.

### **4.4.7.3 DIRECTIVE**

The ASD ERP is documented in the **ASD Emergency Response Plan Manual**.

ASD has established and maintains a site specific ERP in accordance with Transport Canada best practices.

All employees who have the potential to be involved with emergency response are provided with the appropriate training.

ASD periodically tests all sections of their ERP.

## **4.5 CHECKING AND CORRECTIVE ACTION**

The planning involved in the development of the ASD EMS followed the sub-clauses of clause 4.5 (Checking and corrective action) of the ISO Standard 14001, **Environmental Management Systems - Specifications with guidance for use**. The following sub-clauses of the standard make up the planning process of the ASD EMS:

- Monitoring and measurement;
- Nonconformance and corrective and preventive action;
- Records; and
- Environmental management system audit.

### **4.5.1 MONITORING AND MEASUREMENT**

The following section conforms to sub-clause 4.5.1 **Monitoring and measurement**, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

#### **4.5.1.1 PURPOSE**

The purpose of this section is to document ASD's directives for monitoring, measuring and reporting of all operations and activities that include an identified significant environmental aspect.

#### **4.5.1.2 RESPONSIBILITY**

Members of the FESSD are responsible for the monitoring, measurement and reporting of operational environmental indicators developed for the ASD EMS.

The Manager, EMS is responsible for managing, storing and retrieving all information relating to the monitoring and measurement of environmental performance indicators.

Individual staff members with monitoring responsibilities will be required to collect monitoring data according to a schedule developed for each environmental performance indicator.

#### **4.5.1.3 DIRECTIVE**

The structural process used for identifying needed monitoring and measurement programs are documented in the ASD EMS Procedures Manual (Section 4.5.1).

Monitoring and measurement programs have been developed to ensure that ASD adheres to its environmental policy, environmental objectives and targets, EMS Directives, operational procedures, and that operations are in compliance with all legal requirements.

The EMS Manager has developed and implemented a Compliance Audit Plan designed to determine the status of compliance between the operations at ASD and applicable environmental legal and other requirements. This information can be found in the **ASD Compliance Report**.

Responsibilities for the collection of monitoring and measurement information are assigned and reviewed by the FESSD.

## **4.5.2 NONCONFORMANCE AND CORRECTIVE AND PREVENTIVE ACTION**

The following section conforms to sub-clause 4.5.2 Nonconformance and corrective and preventive action, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

### **4.5.2.1 PURPOSE**

The purpose of this section is to document ASD's directives for establishing and maintaining procedures identifying nonconformance and the actions taken to correct procedures and prevent the nonconformance from occurring again.

### **4.5.2.2 RESPONSIBILITY**

The Manager, EMS is responsible for identifying and reporting nonconformance and for taking corrective and preventive action.

The FESSD are responsible for investigating any nonconformance and approving any corrective actions suggested by the Manager, EMS.

The ASD Director General and Management Executive are notified of any nonconformance's and suggested corrective actions associated with the ASD EMS during the **Management Executive EMS Review**. They are notified of any noncompliance's with environmental legal requirements as soon as the noncompliance is identified.

### **4.5.2.3 DIRECTIVE**

The procedures used for investigating and correcting nonconformance are documented in the **ASD EMS Procedures Manual (Section 4.5.2)**.

ASD's procedures for investigating and correcting nonconformance include:

- identifying the cause of the nonconformance;
- identifying and implementing the necessary corrective action;
- identifying, implementing and/or modifying controls to avoid repetition of the nonconformance taking into consideration the severity of the risk and best available technologies which are economically viable (BATEA); and;
- recording any changes in written procedures resulting from the corrective action.

### **4.5.3 RECORDS**

The following section conforms to sub-clause 4.5.3 **Environmental Records**, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

#### **4.5.3.1 RECORDS**

The purpose of this section is to document ASD's directives for identification, maintenance and disposition of environmental records.

#### **4.5.3.2 RESPONSIBILITY**

The Manager, EMS is responsible for implementing and monitoring ASD's system for storing, maintaining and disposing of EMS records.

#### **4.5.3.3 DIRECTIVE**

ASD's EMS records system is documented as per the **ASD EMS Procedures Manual (Section 4.5.3)**.

Samples of all EMS related records and individual details can be found in the ASD EMS Records Manual. Details of records include, but are not limited to; the location of the records, responsibility, what the record is for, and the retention time of the document.

ASD's EMS includes an effective and organized process which ensures that all environmental records are legible, identifiable and traceable to the operations involved.

Examples of ASD environmental records include detailing the implementation and operation of the EMS and for recording the progress of work towards the set environmental objectives and targets.

## **4.5.4 ENVIRONMENTAL MANAGEMENT SYSTEM AUDIT**

The following section conforms to sub-clause 4.5.4 **Environmental management system audit**, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

### **4.5.4.1 PURPOSE**

The purpose of this section is to document ASD's directives for the process by which the EMS is periodically audited.

### **4.5.4.2 RESPONSIBILITY**

The Manager, EMS is responsible for developing an effective internal EMS auditing protocol, used to perform all internal EMS audits.

The FESSD is responsible for implementing and maintaining an effective internal EMS auditing protocol, for performing all internal EMS audits and reporting the audit results to the ASD Director General and Management Executive as part of the **Management Executive EMS Review**

### **4.5.4.3 DIRECTIVE**

ASD's EMS will be audited as per the **ASD EMS Procedures Manual (Section 4.5.4)**.

ASD EMS Audits are performed in order to ensure that:

- the EMS conforms to the specified arrangements for environmental management including the requirements of **ISO 14001:1996**;
- the EMS was properly implemented and maintained; and
- the method for reporting audit results to management is effective and in place.

## 4.6 MANAGEMENT REVIEW

The following section conforms to clause 4.6 Management review, of the ISO Standard 14001, *Environmental Management Systems - Specifications with guidance for use*.

### 4.6.1 PURPOSE

The purpose of this section is to document ASD's directives detailing the process by which the EMS is periodically reviewed by the ASD Director General and Management Executive.

### 4.6.2 RESPONSIBILITY

The FESSD is responsible for making an annual presentation, and providing a report, to the ASD Director General and Management Executive on the status of the EMS. This presentation and report is called the **Management Executive EMS Review**.

The ASD Director General and Management Executive are responsible for participating in the **Management Executive EMS Review** process and providing the FESSD with any resources required for the EMS.

### 4.6.3 DIRECTIVE

The FESSD will make an annual presentation to the ASD Director General and Management Executive, at which time they will present the findings of the internal audit and any other relevant information.

The ASD Director General and Management Executive will review the **Management Executive EMS Review** report, developed by the FESSD. This report is based on the procedures detailed in the **ASD EMS Procedures Manual (Section 4.6)**.

The **Management Executive EMS Review** considers the effectiveness, suitability and adequacy of the EMS and provides the basis for continual improvement.

The process of continual improvement will involve the evaluation of ASD's environmental policy, environmental objectives and targets, responsibilities, concerns voiced by interested parties and other sections of the EMS.

The **Management Executive EMS Review** process is documented and retained as an EMS record.

Aircraft Services Directorate  
Environmental Management System  
Operational Control Manual

February 11, 2000  
Version 2.1

This page was intentionally left blank.

# TABLE OF CONTENTS

1.0 Purpose.....	1
2.0 Methodology .....	2
2.1 What is this Manual? .....	2
2.2 Who does this Manual apply to?.....	2
2.3 How does this manual relate to other ASD EMS Documentation? .....	3
2.3.1 Level 1: ASD EMS Directives Manual.....	3
2.3.2 Level 2: ASD EMS Procedures Manual .....	3
2.3.3 Level 3: ASD EMS Operational Control Manual .....	3
2.3.4 Level 4: ASD EMS Records Manual .....	3
2.4 How does this Manual relate to the ASD Maintenance Control Manual and other related operational control documents? .....	3
2.4.1 Transport Canada's EMS Manual.....	4
2.4.2 ASD Maintenance Control Manual .....	4
2.4.3 ASD Policies and Procedures Manual .....	4
2.4.4 ASD Emergency Response Manual .....	5
2.4.5 EMS Documentation.....	5
2.4.6 Other Sources.....	5
3.0 Operational Controls.....	6
3.1 Painting Operations.....	7
3.2 Hazardous Waste .....	8
3.3 Ozone Depleting Substances.....	9
3.4 Glycol.....	10
3.5 Underground Storage Tanks .....	11
3.6 Emergency Response Plan .....	12

This page was intentionally left blank.

## 1.0 Purpose

This document is the Environmental Management System (EMS) Operational Control Manual for Aircraft Services Directorate (ASD) located at 58 Service Road, Gloucester, Ontario. The purpose of this manual is to provide a reference document to ASD staff, particularly to staff who have environmental responsibilities, on the operational controls associated with ASD operations, activities, products and services.

The ASD EMS Operational Control Manual has been designed to help meet the requirements of the ISO Standard 14001: *Environmental Management Systems - Specification with guidance for use*.

The Operational Control Manual is used to help develop, implement, maintain and continually improve the ASD EMS. The procedures in this manual are followed by all ASD employees to whom they apply. This manual is maintained and continually improved by the Facilities, Environment and Site Safety division. This manual is supported by the ASD Environmental Policy and any nonconformance with these procedures will result in an appropriate corrective action.

## 2.0 Methodology

The methodology used for documenting all ASD EMS operational controls follows the requirements specified in sub-clause 4.4.6 **Operational control**, of the ISO Standard 14001: *Environmental Management Systems - Specification with guidance for use*.

The procedures used for identifying the need for, and developing all environmental operational controls at ASD, can be found in the ASD EMS Procedures Manual, **Section 4.4.6 Environmental Operational Controls**.

The following sections outline important questions and answers related to this manual, explaining how the manual fits into the overall ASD EMS, who it applies to and how to use it.

### 2.1 What is this Manual?

This manual is the ASD EMS Operational Controls Manual. The third of four levels of ASD EMS documentation, the Operational Controls Manual provides procedures developed to ensure that ASD's Environmental Policy and environmental objectives and targets can be met.

The purpose of this manual is to ensure that all ASD operations and activities associated with the identified significant environmental aspects, and in line with ASD's environmental policy, environmental objectives and targets, have been appropriately identified.

ASD have developed operational control procedures for their operations and activities, which focus on the following areas;

- The establishment and maintenance of documented procedures which cover situations where their absence could lead to deviations from the environmental policy and the environmental objectives and targets.
- Specific operating criteria are included in the procedures.
- The procedures reflect the identified significant environmental aspects.

### 2.2 Who does this Manual apply to?

The Operational Controls Manual applies to all ASD employees, contractors and clients whose operations and/or activities have the potential to significantly impact the environment. A level of Significance for each of ASD's environmental aspects was determined (see the **ASD Environmental Aspect Significance Report**). Those ASD operations and activities which have identified significant environmental aspects associated with them required operational control procedures. The procedures listed in

this manual apply to all ASD employees, contractors and clients who's activities are directly related to the identified operations.

The Facilities, Environment and Site Safety division (FESSD) are responsible for the overall development and maintenance of the EMS and this manual. ASD Management Executive are responsible for approving all environmental operational controls which will lead to deviations from original ASD operational procedures.

### **2.3 How does this manual relate to other ASD EMS Documentation?**

The ASD EMS Operational Control Manual is the third of four levels of ASD EMS documentation, the following sections provide a brief description of each.

Each level of ASD EMS documentation exist separate of one another. This manual, as with all ASD EMS documentation, is maintained by the Facilities, Environment and Site Safety division.

#### **2.3.1 Level 1: ASD EMS Directives Manual**

The ASD EMS Directives Manual documents the organization's directives towards each section of their ISO 14001 based EMS.

#### **2.3.2 Level 2: ASD EMS Procedures Manual**

The ASD EMS Procedures Manual provides detailed procedures for each section of the ASD EMS. These procedures were designated to aid in the development, implementation, maintenance and continual improvement of the ASD EMS. Examples of procedures documented in this manual include; the development and maintenance of ASD's Environmental Policy, identification of the Environmental Aspects associated with ASD operations and the process followed when setting Environmental Objectives and Targets for the ASD EMS.

#### **2.3.3 Level 3: ASD EMS Operational Control Manual**

The ASD EMS Operational Control Manual documents the procedures followed by those operations and activities performed at ASD that are associated with the ASD identified significant environmental aspects in line with its environmental policy, objectives and targets.

#### **2.3.4 Level 4: ASD EMS Records Manual**

The ASD EMS Records Manual documents all environmental records kept by ASD for their EMS.

### **2.4 How does this Manual relate to the ASD Maintenance Control Manual and other related operational control documents?**

This manual does not contain any detailed procedures. This manual acts as a road map to all ASD procedures which apply to those ASD operations that have associated significant

environmental aspects. The following section outlines the various manuals where ASD operational procedures can be found. Information provided here includes; who is responsible for them, where they can be found etc. The manuals covered in this section are:

- Transport Canada's Environmental Management System Manual;
- Aircraft Services Directorate Maintenance Control Manual (Policy and Procedures);
- Aircraft Services Directorate Policies and Procedures Manual;
- Aircraft Services Directorate Emergency Response Manual;
- Aircraft Services Directorate EMS Directives Manual;
- Aircraft Services Directorate EMS Procedures Manual; and
- Aircraft Services Directorate EMS Records Manual.

#### **2.4.1 Transport Canada's EMS Manual**

The purpose of this manual is to provide a reference document to Transport Canada (TC) staff, particularly to staff who have environmental responsibilities, and external parties on components of the TC environmental management system (EMS). It is also to ensure that environmental information is kept up-to-date and is accessible to all staff.

The TC EMS Manual provides general departmental operational control procedures for various environmental aspects. This manual is maintained by TC headquarters Environmental Affairs.

A copy of this manual is maintained by the Chief of the Facility, Environment and Site Safety division. The manual is also available electronically on the TC intranet web-site.

#### **2.4.2 ASD Maintenance Control Manual**

The ASD Maintenance Control Manual (MCM) consists of two main components; the Policy Manual and the Procedures Manual. These manuals clearly state all ASD policies and procedures related to ASD operations.

The ASD Quality Assurance division are responsible for the maintenance, distribution and auditing of the ASD MCM.

Copies of these manuals can be found in every operational shop at ASD. The Chief of the Facility, Environment and Site Safety division keeps an electronic copy of the MCM.

#### **2.4.3 ASD Policies and Procedures Manual**

The ASD Policies and Procedures Manual contains internal ASD policies and procedures. Where the MCM contains policies and procedures dealing with the aircraft and associated operations, this manual focuses on other areas at ASD not covered in the MCM.

The ASD Staff Services and Administration division are responsible for the maintenance and distribution of this manual. It is the responsibility of the originating division to audit any policies or procedures they provide for this manual.

Copies of these manual can be found in every operational shop and administrative section at ASD. A copy of this manual is maintained by the Chief of the Facility, Environment and Site Safety division.

#### **2.4.4 ASD Emergency Response Manual**

The ASD Emergency Response Manual is presently under revision. Upon completion, this manual will be maintained by the Facility, Environment and Site Safety division. This division will also be responsible for the distribution and auditing of the Emergency Response Manual.

#### **2.4.5 EMS Documentation**

A description of each level of EMS documentation can be found in section 2.3 of this manual.

#### **2.4.6 Other Sources**

Some procedures listed in this manual can not be found in one of the above listed manuals. These procedures are usually environmental operational controls, developed and maintained by the Manager, Environmental Protection. An example of this type of procedure is the Underground Storage Tank Procedure. Not found in any of the discussed manuals, this procedure is maintained separately by the Manager, Environmental Protection.

Certificates of Approval provided by the provincial government can include specific operational control requirements. Any Certificate of Approval, related to an environmental regulation, will be maintained by the Manager, Environmental Protection. It is the Manager, Environmental Protection's responsibility to make the appropriate ASD employees aware of any Certificates of Approval which apply to their operational areas. Certificates of Approval which have been issued, and apply to an operational area at ASD which has and associated significant environmental aspect, will be included in this manual.

Draft procedures will also not be located in any of the discussed manuals. Procedures which exist only as a draft are maintained by the division of ASD developing them, until they are available for inclusion in one of the discussed manuals.

All 'other sources' will be clearly defined, as introduced, in this manual.

### 3.0 Operational Controls

This manual lists all operational control procedures which apply to ASD's significant environmental aspects. These aspects, and their environmental categories, are listed in **Table 1**. More detailed information on determining significance of ASD environmental aspects, can be found in the ASD Environmental Aspect Significance Report.

**Table 1: Significant Environmental Aspects**

<b>Environmental Category</b>	<b>Significant Environmental Aspect</b>
Air Emissions	1. Painting Operations
Waste Management	2. Hazardous Waste
Hazardous Materials Management	3. Ozone Depleting Substances 4. Glycol 5. Underground Storage Tank
Emergency Response Plan	6. Spills: fuels 7. Spills: chemicals 8. Fires 9. Aircraft Disasters 10. Leaks 11. Transportation of Dangerous Good incidents
Administration	12. Human Resource Management

The following sections list each procedure which applies to the above listed significant environmental aspects.

As new significant environmental aspects are identified, as per procedures, and new operational procedures developed, appropriate amendments to this manual will be made.



### 3.2 Hazardous Waste

Table 3.2 lists all operational control related policies and procedures which apply to the hazardous waste produced by Aircraft Services operations.

**Table 3.2: Hazardous Waste Policies and Procedures**

Operation(s)	Policy	Operational Procedure/Control
<p>All operations generating hazardous waste at ASD (see ASD Dangerous Goods and Chemical Substances Management Program)</p>	<p>ASD Chemical Procurement Policy (Draft)  <b>Note:</b> Maintained by the Facility, Environment and Site Safety division.</p>	<p>Transport Canada EMS Manual: Part C - Significant Aspects; #20 Hazardous Waste.</p> <p>ASD Policies and Procedures Manual: Section 14 - Hazardous Waste Management Procedure (Draft)  <b>Note:</b> Maintained by the Facility, Environment and Site Safety division</p> <p>ASD Policies and Procedures Manual: Section 14 - Hazardous Materials Management Procedure (Draft)  <b>Note:</b> Maintained by the Facility, Environment and Site Safety division</p>

### 3.3 Ozone Depleting Substances

Table 3.3 lists all operational control related policies and procedures which apply to the management of ozone depleting substances at Aircraft Services.

**Table 3.3: Ozone Depleting Substances Policies and Procedures**

Operation(s)	Policy	Operational Procedure/Control
<p>Emergency Response (Fire Extinguishers)</p> <p>Testing &amp; Recharging of Air Conditioning Systems on Aircraft</p> <p>Building Air Conditioning Units</p>	<p>ASD Chemical Procurement Policy (Draft)  <b>Note:</b> Maintained by the Facility, Environment and Site Safety division.</p> <p>ASD Policies and Procedures Manual: Section 14 - Ozone Depleting Substance Policy (Draft)  <b>Note:</b> Maintained by the Facility, Environment and Site Safety division.</p>	<p>Transport Canada EMS Manual: Part C - Significant Aspects; #20 Hazardous Waste.</p>

### 3.4 Glycol

Table 3.4 lists all operational control related policies and procedures which apply to Aircraft Services operations which involve the use of glycol based substances.

**Table 3.4: Glycol Policies and Procedures**

Operation(s)	Policy	Operational Procedure/Control
Aircraft Anti-Icing	<p>ASD Chemical Procurement Policy (Draft)  <b>Note:</b> Maintained by the Facility, Environment and Site Safety division.</p>	<p>Transport Canada EMS Manual: Part C - Significant Aspects; #17 Wastewater Discharges and #21 Hazardous Materials Handling</p> <p>ASD Policies and Procedures Manual: Section 8.7 - Aircraft De-Icing/Anti-Icing</p> <p>ASD Aircraft Anti-Icing Operational Procedure (Draft)  <b>Note:</b> Maintained by the Facility, Environment and Site Safety division.</p>

### 3.5 Underground Storage Tanks

Table 3.5 lists all operational control related policies and procedures which apply to Aircraft Services underground storage tanks (UST).

**Table 3.5: Underground Storage Tank Policies and Procedures**

Operation(s)	Policy	Operational Procedure/Control
All operations generating used oil at ASD (see ASD UST Management Program)	<p>Aircraft Services Directorate Chemical Procurement Policy (Draft)</p> <p>Note: Maintained by the Facility, Environment and Site Safety division.</p>	<p>Transport Canada EMS Manual: Part C - Significant Aspects; #24 Storage Tanks.</p> <p>ASD Underground Storage Tanks Operational Procedure (Draft)</p> <p>Note: Maintained by the Facility, Environment and Site Safety division.</p>

### 3.6 Emergency Response Plan

The following section lists all operational control related policies and procedures which apply to Aircraft Services emergency response.

**Table 3.6: Emergency Response Policies and Procedures**

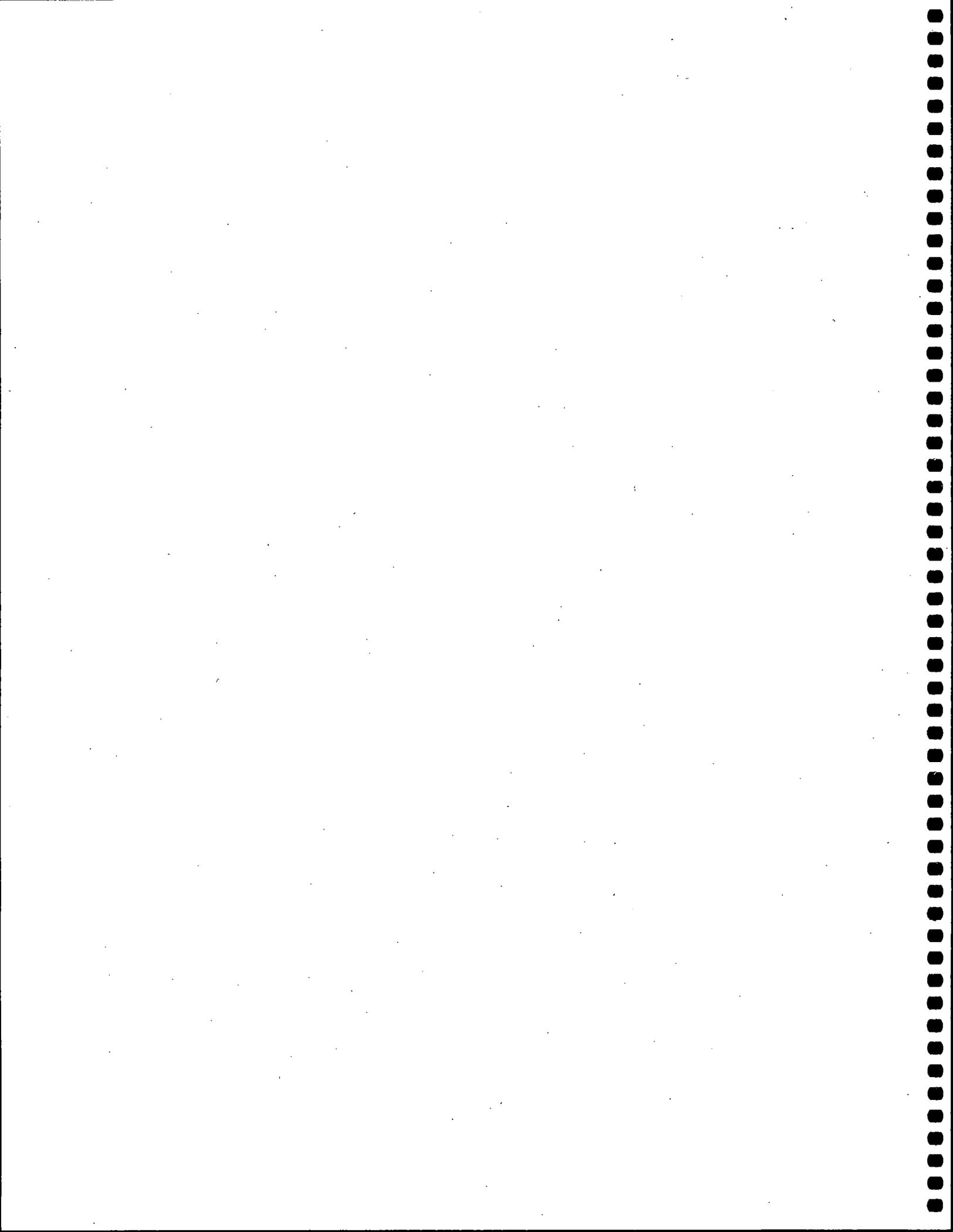
<b>Operation(s)</b>	<b>Policy</b>	<b>Operational Procedure/Control</b>
All ASD Operations.		<p>ASD Emergency Response Manual.</p> <p>ASD Policies and Procedures Manual: Section 14 - Spill Response Procedures (Draft)  <b>Note:</b> Maintained by the Facility, Environment and Site Safety division.</p> <p>Transport Canada EMS Manual: Part C - Significant Aspects; #30 Emergency Preparedness and Response.</p>

**CASE STUDY:  
ISO 14001 PILOT PROJECT  
AT A CANADIAN FEDERAL FACILITY**

**FINAL REPORT**

**JUNE 2000**

*This report was prepared by Innovative Management Solutions Inc. (IMS Inc.) for Environment Canada. The material in it reflects IMS Inc.'s best judgement in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. IMS Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.*



## EXECUTIVE SUMMARY

The ISO 14001 standard is an internationally recognized document designed to help organizations improve and streamline the implementation and maintenance of their environmental management practices through use of an environmental management system (EMS).

The Commissioner of the Environment and Sustainable Development has clearly stated that the ISO 14001 standard will be a key tool for assessing federal departments' development of environmental management systems in support of their sustainable development strategies. Although registration to ISO 14001 is not required, a department should be able to demonstrate that its environmental management system (EMS) embodies the principles of ISO 14001.

In November of 1998, Environment Canada and Transport Canada initiated a pilot project to implement an ISO 14001-compliant EMS at the Aircraft Services Directorate (ASD), a facility under Transport Canada's Safety and Security Branch.

The main purposes of the pilot project were:

- to assess both the time and costs required to implement an EMS comparable to ISO 14001; and
- to share lessons learned from the experience.

### THE FACILITY

The Aircraft Services Directorate (ASD) headquarters facility is located at Ottawa's MacDonal-Cartier International Airport and provides aircraft maintenance, training and support services to Transport Canada as well as other federal government departments and agencies. The facility is the largest aircraft hangar in Ontario and one of Transport Canada's highest producers of hazardous waste.

### RESOURCES UTILIZED

Almost all the EMS development tasks were undertaken by one consultant hired to act as the EMS Manager, aided by two assistants. Development of an EMS for the ASD required roughly eighteen months and \$98 000.

## **LESSONS LEARNED**

- Senior management commitment to the EMS is essential and needs to be communicated throughout the organization.
- The environmental policy needs to be drafted early in the process to provide focus for EMS development.
- Personnel involved in identification of legal requirements or compliance audits must be very familiar with both the facility operations and the applicable legislation and regulations in order to ensure confidence in the results.
- A database is useful for tracking and documenting all responsibilities and training requirements associated with the EMS.
- Extensive classroom-style training is not always necessary. Simple stand-up presentations on the facility floor and use of internal memos can increase awareness of various issues while saving time and money.
- Ensure communication procedures and documentation cover all forms of environment-related discussions with interested parties, including phone or face-to-face conversations.
- A database is an effective way of gathering all EMS-related documentation and making it accessible to those needing it, including auditors.
- An effective records system greatly eases monitoring and auditing the EMS. When planning an EMS, it helps to identify the need for different records at a very early stage. This will help avoid hurried record development and implementation later on.

## **THE CASE STUDY REPORT**

This Case Study Report begins with discussion of environmental management systems, the ISO 14000 series of standards and its principles, and the application of environmental management systems to Canadian federal government facilities. Implementation of ISO 14001 in other public sector organizations is investigated, examining the approach of various municipal and regional organizations, including a large airport, transit authority, and hospital. The Case Study then provides a description of the ASD facility, a general outline of the project and a detailed account of the steps taken to develop and implement the ASD EMS. Using the five principles of the ISO 14001 standard as a framework, this account summarizes the requirements of the standard, the approach taken at ASD, the resources required, the difficulties experienced and the accomplishments made.

# Table of Contents

1.0	<u>INTRODUCTION</u> .....	1
1.1	<u>DOCUMENT PURPOSE</u> .....	1
1.2	<u>WHAT IS AN ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)?</u> .....	2
1.3	<u>INCREASING IMPORTANCE OF EMS DEVELOPMENT IN PUBLIC SECTOR</u> .....	2
2.0	<u>THE ISO 14000 SERIES</u> .....	3
2.1	<u>OPTIONS OF USING ISO 14001 AS A MANAGEMENT TOOL</u> .....	3
2.2	<u>REGISTERED OR CERTIFIED?</u> .....	3
2.3	<u>ISO 14001 AND CONTINUOUS IMPROVEMENT CYCLE</u> .....	3
2.4	<u>THE PRINCIPLES OF ISO 14001</u> .....	1
2.5	<u>ISO 14001 AND THE LAW</u> .....	5
2.5.1	<u>Statute Law</u> .....	5
2.5.2	<u>Case Law</u> .....	6
2.6	<u>PLANS TO USE THE ISO 14001 STANDARD</u> .....	7
3.0	<u>PUBLIC SECTOR EVALUATION OF ISO 14001 AS TOOL FOR EMS IMPLEMENTATION</u> .....	8
3.1	<u>OVERVIEW OF SELECTED PUBLIC SECTOR EMS PROJECTS</u> .....	8
3.1.1	<u>Regional Municipality of Waterloo (RMW), Waste Management Division</u> .....	8
3.1.2	<u>Toronto Airport Authority</u> .....	9
3.1.3	<u>Ontario Clean Water Agency</u> .....	9
3.1.4	<u>The University Health Network</u> .....	9
3.1.5	<u>The Scottish Office, Victoria Quay</u> .....	9
3.1.6	<u>US EPA ISO 14000 Initiative</u> .....	10
3.1.7	<u>The New York City Transit Authority, Capital Management project</u> .....	11
3.1.8	<u>City of Scottsdale, Arizona</u> .....	11
3.2	<u>SUMMARY OF CASE STUDY OBSERVATIONS</u> .....	11
3.2.1	<u>Potential Benefits</u> .....	11
3.2.2	<u>Potential Drawbacks</u> .....	12
4.0	<u>AIRPORT FACILITY ISO 14001 PILOT PROJECT</u> .....	13
4.1	<u>DESCRIPTION OF THE FACILITY</u> .....	13
4.1.1	<u>Facility Operations</u> .....	13
4.1.2	<u>Organizational Structure</u> .....	13
4.1.3	<u>Site One: Hangar, Building T-58</u> .....	14
4.1.4	<u>Site Two: Training Centre, Building O-276</u> .....	14
4.1.5	<u>Additional Areas Within the Site</u> .....	14
4.2	<u>WHY WAS ASD CHOSEN FOR THE ISO 14001 PILOT PROJECT?</u> .....	15
4.3	<u>TOOLS USED</u> .....	15
4.3.1	<u>Internal EMS Committee</u> .....	15
4.3.2	<u>Initial Environmental Review (IER)</u> .....	15
4.3.3	<u>Environmental Aspects and Impact Significance Report</u> .....	16
4.3.4	<u>Other Documents (Resources)</u> .....	16
4.4	<u>EMS DOCUMENTATION</u> .....	16
4.4.1	<u>EMS Directives Manual</u> .....	16

4.4.2	EMS Procedures Manual .....	16
4.4.3	EMS Operational Controls Manual .....	16
4.4.4	EMS Records Manual .....	16
4.5	OUTREACH PROGRAM.....	17
5.0	APPLYING PRINCIPLE ONE: COMMITMENT AND POLICY .....	18
5.1	TOP MANAGEMENT COMMITMENT .....	18
5.1.1	Background.....	18
5.1.2	Implementation .....	18
5.1.3	Required Resources .....	19
5.1.4	Documentation Requirements .....	19
5.1.5	Implementation Challenges and Successes.....	19
5.2	INITIAL ENVIRONMENTAL REVIEW.....	20
5.2.1	Background.....	21
5.2.2	Implementation.....	21
5.2.3	Legislation And Regulations.....	21
5.2.4	Review of Environmental Aspects .....	22
5.2.5	Evaluation of Performance .....	23
5.2.6	Review of Environmental Management Practices and Procedures .....	23
5.2.7	Evaluation of Procurement and Contracting.....	24
5.2.8	Incidents of Non-compliance .....	24
5.2.9	Competitive Advantage .....	24
5.2.10	Interested Parties.....	24
5.2.11	Required Resources .....	25
5.2.12	Documentation Requirements .....	25
5.2.13	Implementation Challenges and Successes.....	26
5.3	ENVIRONMENTAL POLICY.....	28
5.3.1	Background.....	28
5.3.2	Implementation.....	29
5.3.3	Required Resources .....	29
5.3.4	Documentation Requirements .....	29
5.3.5	Implementation Challenges and Successes.....	30
6.0	APPLYING PRINCIPLE TWO: PLANNING.....	31
6.1	ENVIRONMENTAL ASPECTS.....	31
6.1.1	Background.....	31
6.1.2	Identification of Environmental Aspects.....	32
6.1.3	EMS Significant Environmental Aspects Report .....	32
6.1.4	Required Resources .....	32
6.1.5	Documentation Requirements .....	33
6.1.6	Implementation Challenges and Successes.....	33
6.2	LEGAL AND OTHER REQUIREMENTS.....	34
6.2.1	Background.....	34
6.2.2	Implementation .....	35
6.2.3	Required Resources .....	35
6.2.4	Documentation Requirements .....	35
6.2.5	Implementation Challenges and Successes.....	36

6.2.6	<u>Evaluating Compliance with Legal Requirements</u> .....	36
6.3	<u>OBJECTIVES AND TARGETS</u> .....	38
6.3.1	<u>Background</u> .....	38
6.3.2	<u>Implementation</u> .....	39
6.3.3	<u>Required Resources</u> .....	39
6.3.4	<u>Documentation Requirements</u> .....	39
6.3.5	<u>Implementation Challenges and Successes</u> .....	39
6.4	<u>ENVIRONMENTAL MANAGEMENT PROGRAM(S)</u> .....	40
6.4.1	<u>Background</u> .....	40
6.4.2	<u>Implementation</u> .....	41
6.4.3	<u>Required Resources</u> .....	41
6.4.4	<u>Documentation Requirements</u> .....	41
6.4.5	<u>Implementation Challenges and Successes</u> .....	41
7.0	<u>APPLYING PRINCIPLE THREE: IMPLEMENTATION AND OPERATION</u> .....	42
7.1	<u>STRUCTURE AND RESPONSIBILITY</u> .....	42
7.1.1	<u>Background</u> .....	42
7.1.2	<u>Implementation</u> .....	43
7.1.3	<u>Required Resources</u> .....	43
7.1.4	<u>Documentation Requirements</u> .....	44
7.1.5	<u>Implementation Challenges and Successes</u> .....	44
7.2	<u>TRAINING, AWARENESS AND COMPETENCE</u> .....	45
7.2.1	<u>Background</u> .....	45
7.2.2	<u>Implementation</u> .....	46
7.2.3	<u>Required Resources</u> .....	48
7.2.4	<u>Documentation Requirements</u> .....	48
7.2.5	<u>Implementation Challenges and Successes</u> .....	49
7.3	<u>COMMUNICATION</u> .....	50
7.3.1	<u>Background</u> .....	50
7.3.2	<u>Implementation</u> .....	50
7.3.3	<u>Required Resources</u> .....	51
7.3.4	<u>Documentation Requirements</u> .....	51
7.3.5	<u>Implementation Challenges and Successes</u> .....	51
7.4	<u>EMS DOCUMENTATION</u> .....	53
7.4.1	<u>Background</u> .....	53
7.4.2	<u>Implementation</u> .....	53
7.4.3	<u>Required Resources</u> .....	54
7.4.4	<u>Documentation Requirements</u> .....	54
7.4.5	<u>Implementation Challenges and Successes</u> .....	54
7.5	<u>DOCUMENT CONTROL</u> .....	56
7.5.1	<u>Background</u> .....	56
7.5.2	<u>Implementation</u> .....	56
7.5.3	<u>Required Resources</u> .....	57
7.5.4	<u>Documentation Requirements</u> .....	57
7.5.5	<u>Implementation Challenges and Successes</u> .....	57
7.6	<u>OPERATIONAL CONTROL</u> .....	58

7.6.1	<u>Background</u> .....	58
7.6.2	<u>Implementation</u> .....	59
7.6.3	<u>Required Resources</u> .....	59
7.6.4	<u>Documentation Requirements</u> .....	59
7.6.5	<u>Implementation Challenges and Successes</u> .....	59
7.7	<u>EMERGENCY PREPAREDNESS AND RESPONSE</u> .....	61
7.7.1	<u>Background</u> .....	61
7.7.2	<u>Implementation</u> .....	62
7.7.3	<u>Required Resources</u> .....	62
7.7.4	<u>Documentation Requirements</u> .....	62
7.7.5	<u>Implementation Challenges and Successes</u> .....	62
8.0	<u>APPLYING PRINCIPLE FOUR: CHECKING AND CORRECTIVE ACTION</u> .....	63
8.1	<u>MONITORING AND MEASUREMENT</u> .....	63
8.1.1	<u>Background</u> .....	64
8.1.2	<u>Implementation</u> .....	64
8.1.3	<u>Required Resources</u> .....	65
8.1.4	<u>Documentation Requirements</u> .....	65
8.1.5	<u>Implementation Challenges and Successes</u> .....	65
8.2	<u>NON-CONFORMANCE AND CORRECTIVE AND PREVENTATIVE ACTION</u> .....	66
8.2.1	<u>Background</u> .....	66
8.2.2	<u>Implementation</u> .....	66
8.2.3	<u>Required Resources</u> .....	67
8.2.4	<u>Documentation Requirements</u> .....	67
8.2.5	<u>Implementation Challenges and Successes</u> .....	67
8.3	<u>RECORDS</u> .....	68
8.3.1	<u>Background</u> .....	68
8.3.2	<u>Implementation</u> .....	69
8.3.3	<u>Required Resources</u> .....	69
8.3.4	<u>Documentation Requirements</u> .....	69
8.3.5	<u>Implementation Challenges and Successes</u> .....	69
8.4	<u>ENVIRONMENTAL MANAGEMENT SYSTEM AUDIT</u> .....	70
8.4.1	<u>Background</u> .....	70
8.4.2	<u>Implementation</u> .....	70
8.4.3	<u>Required Resources</u> .....	71
8.4.4	<u>Documentation Requirements</u> .....	71
8.4.5	<u>Implementation Challenges and Successes</u> .....	71
9.0	<u>APPLYING PRINCIPLE FIVE: MANAGEMENT REVIEW</u> .....	71
9.1	<u>MANAGEMENT REVIEW</u> .....	72
9.1.1	<u>Background</u> .....	73
9.1.2	<u>Implementation</u> .....	73
9.1.3	<u>Required Resources</u> .....	73
9.1.4	<u>Documentation Requirements</u> .....	73
9.1.5	<u>Implementation Challenges and Successes</u> .....	73

## 1.0 INTRODUCTION

Environmental management has changed a great deal in the 1990s. It has an increased influence on business outcomes, and is more important to the bottom line than ever before. Organizations from both the private and public sector are facing intense pressures to become more efficient and productive.

In private industry the main pressure comes from globalization of trade and the increasing competition from nations around the world. In the public sector, years of cost cutting by all levels of government have at times rivaled the downsizing trend in the private sector. Environmental managers are being challenged to do more with fewer resources.

Organizations are facing more stringent legislation and a demanding public that wants to see improvements to the environment. A survey conducted for the CEPA Office at Environment Canada indicated that 92% of the Canadian public wants protection of the environment and human health as a priority for federal environmental legislation.<sup>1</sup> This comes despite the fact that the levels of many hazardous materials including polychlorinated biphenyls (PCBs) dioxins and organochlorine pesticides, and all of the most common air pollutants except ground level ozone have "declined dramatically" since peaking in the 1970s.<sup>2</sup>

Increasingly, organizations are looking for reliable management frameworks such as the ISO 14001 standard to help streamline the process of implementation and maintenance of their environmental management practices. They are realizing cost savings and environmental benefits. In fact 80% of organizations who register to ISO 14001 find that they begin saving money within six months

### 1.1 DOCUMENT PURPOSE

Environment Canada and Transport Canada have launched a Pilot Project ISO 14001 Environmental Management System (EMS) at the Aircraft Services Directorate facility (ASD) in Ottawa. The main purpose of this document is to:

- increase awareness of ISO 14001 and 14004 as EMS tools;
- assess both the time and costs required to implement an EMS compliant with ISO 14001, using the ASD ISO Pilot Project as a case study;
- share lessons learned from the experience at ASD; and
- provide examples of case studies from other locations.

---

<sup>1</sup> CEPA and Pollution Prevention, CEPA Office, 08 October 1998 [http://www.ec.gc.ca/cepa/cepa6\\_e.html](http://www.ec.gc.ca/cepa/cepa6_e.html)

<sup>2</sup> Health Canada, Health and the Environment - Partners for Life, 1997, p. 1.

## **1.2 WHAT IS AN ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)?**

An environmental management system (EMS) is defined in the ISO (International Organization for Standardization) 14001-1996 standard as:

“The part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy.”

## **1.3 INCREASING IMPORTANCE OF EMS DEVELOPMENT IN PUBLIC SECTOR**

The public sector in general, and the federal government in particular, has been moving towards a more systematic approach for managing environmental impact, risk and responsibilities for some time. At the federal level, the implementation of an EMS became mandatory under the Greening of Government Memorandum to Cabinet. At other levels it has also become more important as organizations recognize the benefits of applying management science to the environment.

## 2.0 THE ISO 14000 SERIES

ISO 14000 is a series of internationally recognized documents designed to help industry integrate environmental considerations into their products and processes. ISO 14001 is a specification standard through which an organization can demonstrate an advanced level of competence in managing the environmental impacts of its activities, processes, and services. ISO 14001 specifies five elements an organization's EMS must fulfill in order to achieve registration to the standard. ISO 14004 is a guidance document that provides more detailed information on the requirements of ISO 14001. An EMS is audited against ISO14001, not ISO 14004.

### 2.1 OPTIONS OF USING ISO 14001 AS A MANAGEMENT TOOL

There are several ways that an organization can use ISO 14001.

- **Third party registration:** An organization develops an EMS based on the principles of ISO 14001. Registration is granted to the organization's EMS following a registration audit performed by the third party. The registration audit verifies that the EMS meets the requirements of the organization's documented system and the ISO 14001 standard.
- **Self-Declaration:** An organization develops an EMS that is compliant with ISO 14001 but does not have it registered by a third party.
- **Development of ISO 14001-based EMS:** An organization can use ISO 14001 as the basis for its EMS without getting registered. This usually involves developing documentation that clearly outlines how the organization addressed each principle and element of the standard. The advantage of this approach is that it allows organizations to compare or benchmark their EMSs. For Canadian federal government departments it ensures compliance with the Cabinet Directive on Greening of Government and it meets the benchmark of the Office of the Commissioner of the Environment and Sustainable Development (CESD).

### 2.2 REGISTERED OR CERTIFIED?

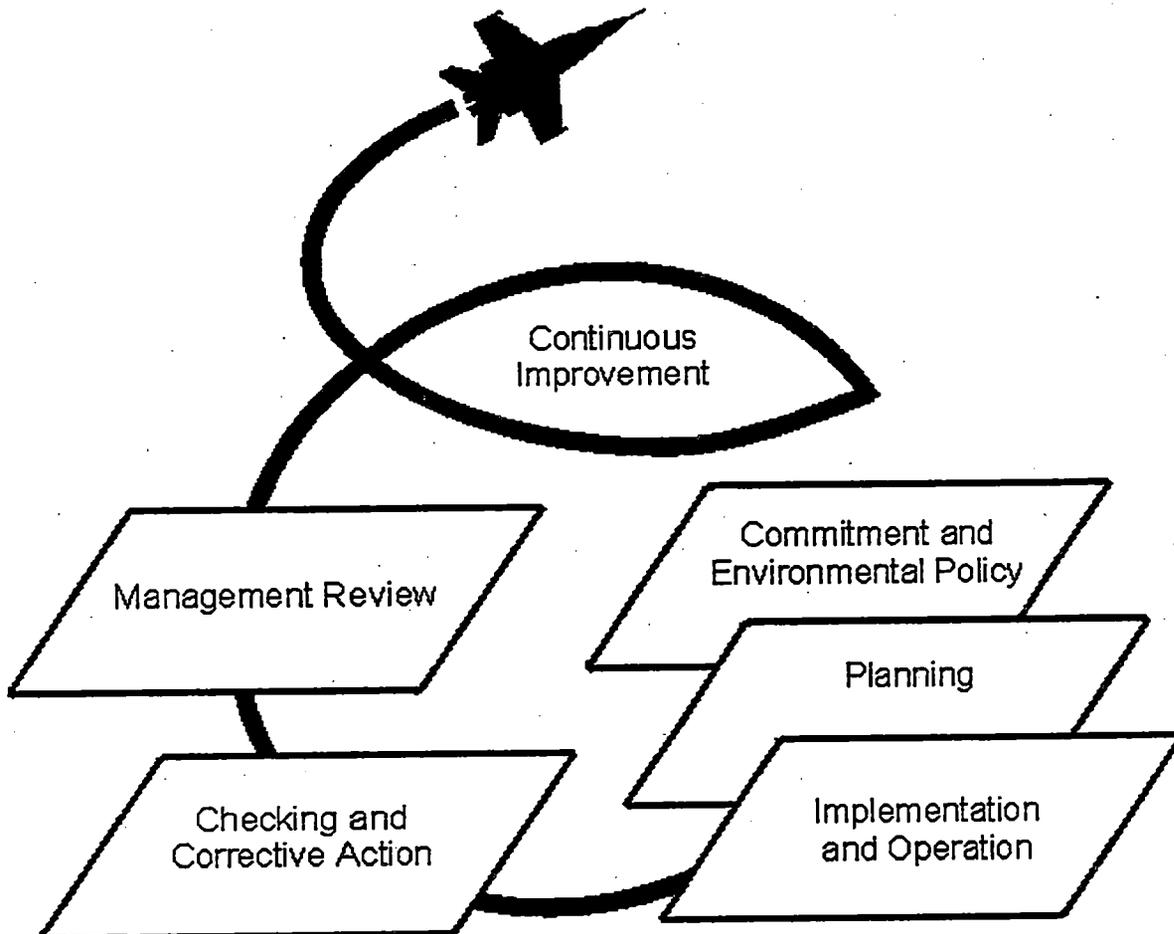
An organization's EMS becomes **registered** to ISO 14001 by means of a conformity assessment performed by a third party. Registrars that are **accredited** by the Standards Council of Canada conduct such third party EMS registrations. This process is often erroneously referred to as **certification**, the correct term is **registration**.

### 2.3 ISO 14001 AND CONTINUOUS IMPROVEMENT CYCLE

The ISO 14001 standard is based on the cycle of continual improvement. The Cycle of Continuous Improvement was developed by quality control expert W. Edwards Deming, and has four steps. The first step is to plan a change of whatever you intend to improve (Plan). The second is to carry out the change (Implementation). The third is to observe the results (Check). The fourth step is to study the results and decide what can be learned from the change (Review). The cycle is then repeated again and again.

When applied to an EMS, the cycle of continuous improvement involves the ongoing monitoring and review of an organization's EMS, with the objective of improving its overall environmental performance. Using the same concept, the ISO 14001 principles are also seen as being part of a repeating cycle, with the first step - Commitment and Policy - set as an initial phase that is integrated into the planning phase after the EMS has been set up. The continuous improvement cycle is illustrated in **Figure 1**.

**FIGURE 1.0 - ISO 14001 PRINCIPLES AND CONTINUOUS IMPROVEMENT**



## 2.4 THE PRINCIPLES OF ISO 14001

To be compliant with ISO 14001 an EMS must contain the following elements:

- Environmental Policy;
- Planning;
- Implementation and Operation;
- Checking and Corrective Action; and
- Management Review.

The first principle specifies that the organization's top management is to develop a documented **Environmental Policy** that includes the scope and commitment to the implementation, maintenance, and continual improvement of the organization's EMS. The policy must include specific commitments to pollution prevention, and adherence to applicable legal and other requirements and it must be communicated to all employees and be available to any interested external party.

The second principle is **Planning** which consists of four elements and requires an organization to create a plan to fulfill its environmental policy. The first two elements require the organization to identify and maintain a list of its significant environmental aspects and applicable legal and other requirements. The other two elements require the organization to establish environmental objectives and targets, and to create environmental program(s) to achieve them.

The third principle, **Implementation and Operation**, requires an organization to develop the capabilities and support mechanisms necessary to achieve its environmental policy, objectives and targets. To fulfill the seven elements under this principle an organization must:

- Define roles, responsibilities, and authorities with regard to the EMS;
- Assess the training, awareness, and competence of employees;
- Establish and maintain procedures for communication with regard to the EMS;
- Document the core elements of the EMS;
- Establish and maintained procedures for document control;
- Document procedures and Operational controls for activities that have or may have a significant environmental impact; and
- Establish emergency preparedness and response procedures.

The fourth principle specifies that the organization shall implement a system for **Checking and Corrective Action**. This system shall include procedures to monitor and measure key characteristics of the organization, to establish and maintain environmental records, to identify nonconformance and complete corrective and preventive action, and to assess EMS performance through internal audits.

The fifth principle specifies that the organization is to hold a **Management Review** at regular intervals to ensure the adequacy and effectiveness of the EMS.

## **2.5 ISO 14001 AND THE LAW**

### **2.5.1 STATUTE LAW**

*The Auditor General Act* was amended in 1995 to create the Office of the Commissioner of the Environment and Sustainable Development, and introduce a new requirement for all government departments - the development and tabling in Parliament of a sustainable development strategy every three years.

Also in 1995, all Ministers signed the Greening of Government Memorandum to Cabinet **Greening of Government Policy**. The policy commits federal departments to address a number of specific issues in their sustainable development strategies. Departments must do the following:

- Meet or exceed federal environmental statutes & regulations;
- Emulate best practices from the public and private sectors; and
- Develop and implement environmental management systems, including action plans.<sup>3</sup>

In the Report of the Auditor General tabled in 1998, the issue of the applicability of *The Code of Environmental Stewardship* to agencies and crown corporations was still not clear. If it is determined that it does apply, it is a very comprehensive list of commitments. Even if it does not apply, the sheer force of environmental laws facing many agencies and crown corporations is substantial.

Although organizations are not required to develop and implement an EMS by law, they may be compelled to do so to meet other requirements. In addition, a due diligence review would likely recommend an approach to an EMS based on industry standards, which in this case would be a system comparable to other federal government organizations.

The new Canadian Environmental Protection Act (CEPA) includes provisions for the Government of Canada to require an EMS that applies to all federal lands:

*209. (1) The Governor in Council may, on the recommendation of the Minister, make regulations for the protection of the environment, including, but not limited to, regulations respecting*

- *the establishment of environmental management systems;*

## 2.5.2 CASE LAW

The courts are also looking at environmental management systems, specifically ISO 14001, as a remedy for non-compliance with CEPA. In two individual cases, one in Alberta and one in Ontario, companies were ordered to develop an EMS and to have it certified under ISO 14001 within a timeframe specified by the courts.

In 1996, an Alberta court determined that Prospec Chemicals had contravened its operating license thus violating the province's environmental protection legislation. The company was not able to rely on a 'due diligence' defence as it had no environmental management system (EMS) in place. As a result of its violation the Company was fined \$100,000 and ordered to implement and register an ISO 14001-compliant EMS by June 1998.

In August 1998, an Ontario court determined that Coretec had violated sections 113(j) and 116 of the federal Canadian Environmental Protection Act (CEPA). The court ordered Coretec to pay a

---

<sup>3</sup> Environment Canada, [Directions on Greening Government](http://www.ec.gc.ca/gog/general/deback.htm), 1995, [www.ec.gc.ca/gog/general/deback.htm](http://www.ec.gc.ca/gog/general/deback.htm)

\$30,000 fine, to implement and maintain an EMS, and have the EMS registered to the ISO 14001 standard. Other requirements included assisting with various pollution prevention programs at the federal, provincial, municipal and organizational levels.

## 2.6 PLANS TO USE THE ISO 14001 STANDARD

The Commissioner of the Environment and Sustainable Development has clearly stated that the ISO 14001 standard will be a key tool for assessing EMS development in support of sustainable development strategies. The following statement was included in the 1999 Report to Parliament.

**Implementing their strategies.** Since the release of their strategies, departments have turned their attention to delivery. Each year, I will report on the extent to which departments did what their strategies said they would do. Using the ISO 14001 standard as our benchmark, we will continue to examine departments' management of strategy implementation.<sup>4</sup>

This clear indication of support for the standard puts added pressure on departments to consider using it as a management tool. At the very least it suggests that a department should be able to demonstrate how its EMS is "as good as or better than" an ISO 14001 EMS.

---

<sup>4</sup> Report of the Commissioner of the Environment and Sustainable Development – 1999 – The Commissioner's Observations, Section 59.

### **3.0 PUBLIC SECTOR EVALUATION OF ISO 14001 AS TOOL FOR EMS IMPLEMENTATION**

Initially, the vast majority of public sector organizations saw limited value in using the ISO 14001 standard because it was unlikely that they would register to the standard. Now they are taking a second look at the standard.

In the United States there are several pilot projects underway, while in Canada a number of public sector organizations have become registered. It is within this context that Environment Canada and Transport Canada launched the ISO Pilot Project at the Aircraft Services Facility in Ottawa.

To determine if ISO 14001 can have a place in public sector policy or regulations, it is important to assess both the costs and time required to put a compliant EMS in place. In order to perform a proper assessment of the Airport Pilot Project a comparison must be made to other relevant case studies.

#### **3.1 OVERVIEW OF SELECTED PUBLIC SECTOR EMS PROJECTS**

The following are summaries of costs, benefits and challenges experienced by public institutions that have used the ISO standard as a tool for implementing their EMS. Some of these institutions have obtained formal registration of their EMS to the ISO 14001 standard; others are still in the process of implementation.

##### **3.1.1 REGIONAL MUNICIPALITY OF WATERLOO (RMW), WASTE MANAGEMENT CENTRE**

The Waste Management Centre (WMC) of the RMW, consisting of approximately seventy employees, has obtained registration of their EMS. The registration includes most operations and programs conducted at or administered from the WMC including landfilling, collection and processing of recyclables, collection of household hazardous waste, and composting.

Implementation expenses are estimated at approximately \$50,000, including registration and two annual surveillance audits, software, auditor training courses, and other miscellaneous expenses. This estimate does not include the staff costs as EMS duties were taken on by existing personnel. Most responsibilities for developing the EMS over the 18 month implementation period resided with one coordinator and one clerk, with additional assistance from a summer student. Annual costs to maintain the system have not been estimated but would include among other items approximately \$4000 for auditing by third party, and \$800 for software renewal. Existing staff conduct internal audits and annual refresher training for employees. Maintenance of the system requires about half the time of the coordinator and clerk.

The RMW reported many benefits such as an improved data and document management system, heightened staff awareness of emergency and operational procedures, and management of risk inherent in the proximity of the facility to residential neighbourhoods and environmentally-sensitive protected areas. Lessons learned from the WMC's experience are to inform and involve

all staff early in the EMS implementation process, and resist the urge to 'document everything' or the document control system will require an excessive amount of maintenance.

### **3.1.2 TORONTO AIRPORT AUTHORITY**

The Toronto Airport Authority is a non-profit corporation consisting of seventy-nine gates, seventeen commuter aircraft parking positions, and twenty-three off-gate ground-loaded aircraft parking positions. The airport authority has over a thousand employees and tenants. Each year the airport has twenty-eight million passengers pass through its seventy-nine gates.

The Toronto Airport Authority obtained registration of its EMS at a cost of \$30,000 for registration, and \$100,000 for additional staff support during registration. Reported challenges included difficulty obtaining the attention of an already busy staff, and a volume of work that was not anticipated (despite the existence of an already reliable system). Those involved in the management of the EMS report that ISO provides a great framework for continuous improvement, assigning targets, and assignment of roles and responsibilities.

### **3.1.3 ONTARIO CLEAN WATER AGENCY**

The Ontario Clean Water Agency (OCWA) with a staff of seven hundred is a crown corporation that operates four hundred facilities and is the largest water and wastewater operator in Canada. The OCWA has implemented a company-wide EMS based on ISO 14001. In June 1998, the OCWA-operated water system serving almost 1 million people in the Region of Peel became the first in North America to become registered to ISO 14001. The registration took just three months to complete. The policies and procedures of the EMS are closely integrated with the occupational health and safety system.

### **3.1.4 THE UNIVERSITY HEALTH NETWORK**

The University Health Network consists of four sites with over nine thousand employees and two hundred thousand patient days. The Network has five priority health areas, teaching facilities, and medical testing services.

The cost for implementation of the EMS included \$60,000 for registration and consulting, \$50,000 for a full-time EMS coordinator at the facility, and \$20,000 for staff costs of an EMS committee. Challenges during implementation included finding and appropriate senior manager to champion the cause, determining which programs and procedures already existed, and determining existing roles and responsibilities. However the benefits outweigh the challenges that included accreditation efficiencies and higher ranking, operating efficiencies and decreased costs, improved due diligence, international and public recognition, and increased employee pride.

### **3.1.5 THE SCOTTISH OFFICE, VICTORIA QUAY**

The Victoria Quay is a four-storey building that covers 27,885 m<sup>2</sup> (300,000 square feet). It houses fourteen hundred employees in seventy-four divisions with differing functions in a variety of complex facilities.

Victoria Quay achieved ISO 14000 registration in June 1998. It is the largest United Kingdom government building registered.

Officials were proud to have received the registration and praised the work and interest of all employees. However, officials recognize that registration is a continuous process of improvement and that it demands year-to-year improvement.

Obtaining ISO 14000 registration has allowed the organization to demonstrate sound environmental performance, and the establishment of effective procedures in identifying, controlling, and managing the environmental risks of its activities.

### **3.1.6 US EPA ISO 14000 INITIATIVE**

In 1997, the US EPA began the ISO 14001 Municipalities Initiative Pilot Project. This initiative involves the participation of seven US municipalities, one county and one state institution, as listed below.

- Town of Londonderry, New Hampshire
- City of Lowell, Massachusetts
- Wayne County, Michigan
- City of Indianapolis, Indiana
- Massachusetts Department of Corrections
- City of Gaithersburg, Maryland
- Lansing Board of Water & Light, Michigan
- City of Scottsdale, Arizona
- New York City, New York

The Municipalities Initiative represents a unique opportunity for small and medium sized government organizations to test the benefits of and ISO 14001-compliant EMS.

The project vision:

*The use of voluntary environmental management systems (EMS) by organizations is rapidly increasing around the world. These systems provide a framework for organizations and communities to more effectively manage their environmental obligations, including those required to comply with applicable statutes and regulations. In addition, these systems can be useful for moving beyond compliance, improving overall environmental performance, and making greater use of pollution prevention approaches.<sup>5</sup>*

EPA Project objectives include evaluating the effect of the ISO 14001 EMS on the management of these environmental issues, tracking costs, staff commitment, benefits, hurdles, environmental performance, interested stakeholder involvement, and pollution prevention activities, and communicating results and lessons learned across the public and private sector.

---

<sup>5</sup> Jim Horne, United States Environmental Protection Agency Office of Wastewater Management

In June of 1999, a conference was held in New York City to wrap-up the initiative. Although not all participants have received registration, all described benefits that included coordination of environmental issues, reduction in liability costs, local publicity and improved relationships with other public and private businesses.

### **3.1.7 THE NEW YORK CITY TRANSIT AUTHORITY, CAPITAL MANAGEMENT PROJECT**

The New York City (NYC) Transit Authority was one of the organizations involved in the US EPA ISO 14001 Pilot Project. The capital management project employs forty four thousand people, manages four hundred and sixty-nine stations, two hundred and thirty route miles of track, six thousand subway cars and two hundred and thirty buses. It transports approximately four million people per day on trains and one and one quarter million by bus.

The NYC Transit Authority received registration of its Capital Management project EMS in March of 1999, only three months after implementation.

### **3.1.8 CITY OF SCOTTSDALE, ARIZONA**

The City of Scottsdale, another US EPA ISO 14001 Pilot Project participant has committed to continuously improving citywide environmental management practices and to become a model of environmental performance. There are two City departments involved in the Municipalities Project. All fourteen City departments will be part of the completed citywide EMS.

The target date for completion of EMS implementation is February 2000. To date the EMS implementation team has:

- established a dedicated web site called the "Virtual ECO-SYSTEM;
- established a procedure for identifying environmental aspects and impacts using a committee-based system; and
- established a procedure for identifying legal and other requirements.

Already the city has reported many benefits of implementing an ISO 14001-compliant EMS. Some of the benefits reported are: improved environmental performance, enhanced customer trust, improved regulatory partnerships, reduced liability, improved compliance, improved public image, improved environmental sustainability indicators, and reduced costs.

## **3.2 SUMMARY OF CASE STUDY OBSERVATIONS**

The following are summaries of the potential benefits and drawbacks expressed by those involved in the above case studies.

### **3.2.1 POTENTIAL BENEFITS**

- ISO is seen as a way to get organized, and to manage environmental risk in a systematic fashion.
- The process forces organizations that may be resistant to change to ensure that every environmental responsibility is written into someone's job description.

- An ISO EMS puts you in a better position to manage your data electronically - you are forced to get organized.
- For organizations with significant legislative requirements, such as the RMW landfill, the system can help prepare for government compliance visits.
- Improved operating efficiencies and decreased costs.
- Improved due diligence.
- International and public recognition.
- Employee pride.
- Follow-up in the 'check-do-plan-review' cycle is reinforced with emphasis on audits and management review.
- The EMS can leverage efforts by including or linking to occupational health and safety, although this isn't required.

### **3.2.2 POTENTIAL DRAWBACKS**

- Cost - although the bulk of costs are staff costs.
- Paperwork - since inspectors are only looking at one or a few requirements at a time the impact of having an external auditor visit can be easily underestimated.
- Time - The Toronto Airport Authority expects to finish 2 years after starting and all of the EPA pilots are expected to take 2 years.

## **4.0 AIRPORT FACILITY ISO 14001 PILOT PROJECT**

Transport Canada intends to implement ISO 14001-compliant EMSs in its key operational facilities. In November of 1998 Environment Canada and Transport Canada initiated a pilot project to implement an ISO 14001-compliant EMS at the Aircraft Services Directorate (ASD), a facility under Transport Canada's Safety and Security Branch.

### **4.1 DESCRIPTION OF THE FACILITY**

The Aircraft Services Directorate (ASD), a federal facility under Transport Canada's Safety and Security Branch, is located at Ottawa's MacDonald-Cartier International Airport, 58 Service Road, Gloucester, Ontario. ASD provides aircraft maintenance and support services to Transport Canada as well as other federal government departments and agencies. This includes the provision of professional training for Transport Canada and Transportation Safety Board pilots and for ASD aircraft maintenance engineers and electronics technicians.

#### **4.1.1 FACILITY OPERATIONS**

The facility is the largest aircraft hangar in Ontario and one of Transport Canada's highest producers of hazardous waste. Facility activities include:

- operations ranging from washing planes to rigorous maintenance of aircraft engines;
- stripping and painting of entire aircraft at a state-of-the-art painting shop;
- non-destructive testing of aircraft parts and equipment;
- helicopter component overhaul and engine repair;
- utilization of oil-water separators, underground and aboveground storage tanks, and other hazardous material storage facilities;
- training of Transport Canada pilots using two aircraft flight simulators; and
- training of employees in WHMIS, TDG and Spill Response.

#### **4.1.2 ORGANIZATIONAL STRUCTURE**

The directorate headquarters is comprised of the following branches and divisions:

- Flight Operations Branch;
- Technical Services Branch;
- Training Branch;
- Engineering Branch;
- Client and Internal Services Branch; and
- Aviation Safety Division.

The physical scope of the Pilot Project EMS includes all buildings, structures and land contained on the facility property and the activities performed there. These activities include any and all operations performed by facility employees and contractors on facility property.

#### **4.1.3 SITE ONE: HANGAR, BUILDING T-58**

The Aircraft Services hangar at the airport is the administrative and operational headquarters for the ASD. It accommodates approximately 220 employees and fifteen aircraft. The hangar includes the following operational areas:

- flight operations/dispatch office;
- parts warehouse;
- avionics electrical maintenance;
- instrument and electrical shops;
- component overhaul shop;
- technical library and records office;
- machine and hydraulic shops;
- paint shop;
- carpentry shop;
- battery shop;
- upholstery shops;
- non-destructive testing shop for the testing of aircraft parts and equipment; and
- administration area for:
  - ✓ senior management;
  - ✓ inspection;
  - ✓ finance;
  - ✓ planning;
  - ✓ purchasing;
  - ✓ personnel;
  - ✓ facilities;
  - ✓ informatics;
  - ✓ dangerous goods and environmental protection;
  - ✓ central records; and
  - ✓ inventory management.

#### **4.1.4 SITE TWO: TRAINING CENTRE, BUILDING O-276**

The Aircraft Services Training Centre, is located adjacent to the hangar. The training centre conducts courses for Transport Canada's civil aviation inspectors, aircraft maintenance engineers and avionics and electronic technicians. The facility, which opened in 1991, includes five classrooms, administration offices, a boardroom, a library, a staff/student lounge and a large bay which houses two flight simulators. The flight simulators are a Cessna Citation II full flight simulator and a King Air 90/100 Flight Training Device. The Training Centre staff also develops training calendars, technical manuals, and computer-based course material and course presentation packages with multi-media equipment such as graphics design equipment, computers, VCRs, monitors, cameras and colour photocopiers.

#### **4.1.5 ADDITIONAL AREAS WITHIN THE SITE**

These areas are outside of the two main buildings but are still a part of the physical site:

- hydraulic pump house located behind Building B which houses mechanical equipment required for the simulators;
- apron, the area located directly outside of the hangar's north side, where aircraft is parked and refueled;
- helicopter landing pad off the east end of the hangar;
- employee parking lot;
- two hazardous waste storage sheds stationed outside the hangar;
- three storage sheds used by the facilities central stores for storing petroleum, oil, and lubricant products; and
- a third building used for administrative storage (does not any contain hazardous materials).

## **4.2 WHY ASD WAS CHOSEN FOR THE ISO 14001 PILOT PROJECT**

The ASD was chosen as the location to perform the pilot project for the following reasons:

- proximity to both Environment Canada and Transport Canada headquarters;
- initial appearance (i.e. cleanliness);
- existence of effective management practices;
- wide range of operations (i.e. paint shop, storage tanks, different kinds of hazardous waste, aircraft, simulators, administrative areas etc.); and
- interest from facility management to participate in pilot project.

## **4.3 TOOLS USED**

The following section details the main tools used in developing and implementing the EMS at the ASD.

### **4.3.1 INTERNAL EMS COMMITTEE**

- EMS Manager (Consultant);
- Facilities, Environment and Site Safety Division;
- Chief, Division Manager;
- Manager, Environmental Protection;
- Manager, Site Safety and Support;
- Manager, Facilities Engineering;
- Environmental Support Student; and
- Other facility personnel were involved in the internal development on an as-needed basis.

The Pilot Project facility management committed the time of the Facilities, Environment and Site Safety Division (FESSD). However, time available by FESSD employees was limited.

### **4.3.2 INITIAL ENVIRONMENTAL REVIEW (IER)**

An IER was performed to determine the current position of the organization with regard to environmental management.

### **4.3.3 ENVIRONMENTAL ASPECTS AND IMPACT SIGNIFICANCE REPORT**

The report was developed by the EMS Manager and IMS Inc., and includes:

- environmental aspects;
- environmental impacts;
- description of operations;
- responsibilities; and
- aspect significance matrix.

### **4.3.4 INTERNAL AUDIT AND EXTERNAL DOCUMENTATION AND READINESS REVIEW**

An internal EMS audit was completed over a two-day period and in accordance with the ISO standards 14010, 14011 and 14012. Each step of the audit process is documented in the ASD Internal EMS Audit Report.

A one-day Documentation and Readiness Review audit was performed by a team of external auditors as well. Non-conformances were identified and reported to the appropriate ASD personnel.

### **4.3.5 OTHER DOCUMENTS (RESOURCES)**

- Transport Canada Environmental Management System Manual;
- The ISO 14000 Essentials; A practical guide to implementing the ISO 14000 Standards (PLUS 14000, CSA);
- Transport Canada EMS Audit Protocol; and
- Transport Canada EMS Training and Awareness piece.

## **4.4 EMS DOCUMENTATION**

The Pilot Project EMS is documented and controlled in 4 separate levels of documentation.

### **4.4.1 EMS DIRECTIVES MANUAL**

The EMS Directives Manual summarizes the policies and goals associated with establishing and maintaining each of the elements that make up the EMS.

### **4.4.2 EMS PROCEDURES MANUAL**

The EMS Procedures Manual lists the managerial and administrative procedures developed to establish and maintain each of the elements that make up the EMS.

### **4.4.3 EMS OPERATIONAL CONTROLS MANUAL**

The EMS Operational Controls Manual lists all the operational procedures developed to ensure work processes for activities associated with identified significant environmental aspects are in line with the pilot project facility's environmental policy, objectives and targets.

### **4.4.4 EMS RECORDS MANUAL**

The EMS Records Manual documents all environmental records kept by the pilot project facility for its EMS.

## 4.5 OUTREACH PROGRAM

The pilot project team has also been responsible for:

- providing project updates to the members of the Federal Committee on Environmental Management Systems (FCEMS);
- organizing a series of four workshops for Environment Canada; and
- documenting the pilot project in a case study report

Two workshops have been developed to provide project updates - one was held in March 1999, another in April 2000. The remaining workshops were developed as training sessions and included:

- One half-day workshop on environmental aspects; and
- One full-day workshop providing a primer on ISO 14001 and internal EMS auditing.

## 5.0 APPLYING PRINCIPLE ONE: COMMITMENT AND POLICY

### 5.1 TOP MANAGEMENT COMMITMENT

TABLE 1: OVERVIEW OF TOP MANAGEMENT COMMITMENT

<b>What the Standard Requires</b>	
<p>The ISO 14001 standard does not contain an element dedicated to Top Management Commitment. However, various elements refer to the duties of top management, particularly regarding defining the environmental policy, providing adequate resources and reviewing the EMS. The ISO 14004 standard, <i>Environmental management systems – General guidelines on principles, systems and supporting techniques</i> states:</p> <p>“To ensure success, an early step in developing or improving an EMS involves obtaining commitment from the top management of an organization to improve the environmental management of its activities, products or services. The ongoing commitment and leadership of the top management are crucial.”</p>	
<b>Approach Taken at ASD</b>	<b>The Registrar's Observations</b>
<ul style="list-style-type: none"> <li>Meetings were held with the Management Executive to explain the project scope and benefits and obtain their approval.</li> </ul>	<ul style="list-style-type: none"> <li>This item was not audited.</li> </ul>
<b>Cost</b>	
<ul style="list-style-type: none"> <li>3 person weeks, \$2,745</li> </ul> <p>See Appendix 1 for full breakdown of project costs.</p>	
<b>Recommendations</b>	
<ul style="list-style-type: none"> <li>Commitment from management should come in the form of a written document (policy or pledge).</li> </ul>	

#### 5.1.1 BACKGROUND

This is the most important step in the development of an EMS. Without full commitment from top management the EMS will not be developed and implemented effectively. Commitment from management should come in the form of a written document (policy or pledge) detailing what resources will be made available to staff responsible for the EMS.

This section details the course of events associated with receiving commitment from the pilot project facility Management Executive.

#### 5.1.2 IMPLEMENTATION

Representatives from Transport Canada Headquarters and Environment Canada met with environmental management at the facility [the Facilities, Environment and Site Safety Division (FESSD)], to discuss the pilot project purpose and goals. Two additional meetings followed, at which time Environment Canada and Transport Canada representatives and the EMS Manager met with the facility Management Executive to explain the project scope and benefits.

Four weeks later the Management Executive at the facility gave formal commitment to the proposed EMS pilot project.

### **5.1.3 REQUIRED RESOURCES**

Three meetings were held prior to obtaining management commitment to the EMS. The first meeting was held at the facility and involved Environment Canada and Transport Canada representatives and the Facilities, Environment and Site Safety Division (FESSD). A second meeting involved Environment Canada and Transport Canada representatives, the EMS Manager, the FESSD and the Director. A third meeting involved Environment Canada and Transport Canada representatives, EMS Manager, the FESSD and the pilot project facility Management Executive.

### **5.1.4 DOCUMENTATION REQUIREMENTS**

Top management commitment must be documented in the Environmental Policy. More detailed information regarding documentation of top management commitment can be found in section 5.3 - Environmental Policy.

### **5.1.5 IMPLEMENTATION CHALLENGES AND SUCCESSES**

The Management Executive initially only agreed to the use of ASD as a model facility for development of an ISO-compliant EMS. They had not committed to following through with the EMS after completion of the pilot project. However, as the project progressed, the Management Executive became increasingly interested in the accomplishments made with the EMS and ASD commitment and involvement improved.

## 5.2 INITIAL ENVIRONMENTAL REVIEW

**TABLE 2: OVERVIEW OF THE INITIAL ENVIRONMENTAL REVIEW**

<p><b><i>What the Standard Requires</i></b></p> <p>The ISO 14001 standard does not contain an element dedicated to Initial Environmental Review. The ISO 14004 standard, <i>Environmental management systems – General guidelines on principles, systems and supporting techniques</i>, however, states:</p> <p>“The current position of an organization with regard to the environment can be established by means of an initial environmental review. The initial review can cover the following:</p> <ul style="list-style-type: none"> <li>-identification of legislative and regulatory requirements;</li> <li>-identification of environmental aspects of its activities, products or services so as to determine those that have or can have significant environmental impacts and liabilities;</li> <li>-evaluation of performance compared with relevant internal criteria, external standards, regulations, codes of practice and sets of principles and guidelines;</li> <li>-existing environmental management practices and procedures;</li> <li>-identification of the existing policies and procedures dealing with procurement and contracting activities;</li> <li>-feedback from the investigation of previous incidents of non-compliance;</li> <li>-opportunities for competitive advantage;</li> <li>-the views of interested parties;</li> <li>-functions or activities of other organizational systems that can enable or impede environmental performance.</li> </ul> <p>In all cases, consideration should be given to the full range of operating conditions, including possible incidents and emergency situations.</p> <p>The process and results of the initial environmental review should be documented and opportunities for EMS development should be identified.”</p>	
<p><b><i>Approach Taken at ASD</i></b></p> <ul style="list-style-type: none"> <li>• Task group formed.</li> <li>• Anonymous questionnaires and direct inspection used to collect information.</li> <li>• Followed ISO 14004 suggested practices for IER.</li> <li>• Produced an IER report</li> </ul>	<p><b><i>The Registrar's Observations</i></b></p> <ul style="list-style-type: none"> <li>• (The IER report was included in the audit of EMS documents – no comments were made)</li> </ul>
<p><b><i>Cost</i></b></p> <ul style="list-style-type: none"> <li>• 10 person weeks, \$9,150</li> </ul> <p>See Appendix 1 for full breakdown of project costs.</p>	
<p><b><i>Recommendations</i></b></p> <ul style="list-style-type: none"> <li>• Use a strong commitment from senior management to enforce the importance of conducting the IER and encourage cooperation of employees.</li> </ul>	

### **5.2.1 BACKGROUND**

An IER can best be described as an environmental baseline study - a snapshot of the present state of an organization's environmental management operations. Conducting an IER is a recommended practice in ISO 14004 and is not a requirement of ISO 14001. Organizations who have conducted recent environmental baseline studies may wish to skip the IER on the basis that enough information already exists to aid in EMS development.

### **5.2.2 IMPLEMENTATION**

An IER was performed at the pilot project facility. The EMS Manager and an assigned EMS Task Group conducted the IER. Work began on the IER in November of 1998 and concluded in February of 1999.

Members of the EMS Task Group were responsible for gathering information from their related work areas. Questionnaires and direct inspection were used to collect data during the IER. Questionnaires allowed employees to anonymously relate their opinions to the EMS Task Group. The questionnaire was followed by direct inspection of all operations. Interviews with individual employees helped to develop an efficient environmental baseline. All information was gathered using a consistent method.

IER research and evaluation were conducted in the following areas:

- Legislation and Regulations;
- Environmental Aspects;
- Evaluation of Performance;
- Environmental Management Practices and Procedures;
- Procurement and Contracting;
- Incidents of Non-compliance;
- Competitive Advantage; and
- Interested Parties

All of the ISO 14004 suggested practices were completed when conducting the IER, and they have been documented in the pilot project facility IER document. When developing the IER, the EMS Manager also considered the full range of operating conditions at the facility including possible incidents and emergency situations. Opportunities for EMS development were identified and included in the IER.

### **5.2.3 LEGISLATION AND REGULATIONS**

The minimum requirement for an ISO 14001 EMS is commitment to compliance with all applicable legislation and regulations. It is essential for an organization to maintain a consolidated inventory of all legal and other requirements that apply to their operations.

Regulations can be set at several levels of government;

- Municipal;
- Provincial;

- Federal; and
- International.

Other requirements include;

- industry codes of practice;
- agreements with public authorities; and
- non-regulatory guidelines.

Identifying all legal and other requirements, if not already done so, should be one of the highest priorities in early EMS development. Most organizations keep some sort of inventory of environmental legal requirements, but do not know specifically which regulations apply to their organization. Determining which regulations apply to the organization is vital.

Once the organization has identified all legal and other requirements they must then determine if they are in compliance with each of these requirements. This must be determined before any further steps in the EMS development can be fully completed.

Determining if your operations are within compliance with environmental regulations can prove to be a very cumbersome task. If an organization does not have the necessary monitoring equipment or the trained staff to use such equipment, they will have to search for other options when investigating their compliance.

One option is to have a compliance audit performed by an outside source. A compliance audit can be performed to first let you know what legal requirements apply to your organization and then determine if you are in compliance with these requirements. This process is expensive but it is the most effective way of assuring that an organization has met all of the ISO 14001 EMS requirements for environmental legislation and regulations. These efforts could also result in saving the organization money, through cost avoidance of large fines.

Attempting to identify and determine compliance with legal and other requirements may prove to be a very long and confusing task for organizations that do not choose to have a compliance audit performed. Unless an organization has a specific legal division that specializes in environmental legislation and regulations, it will take staff longer to determine which laws apply to the organization and its operations.

#### **5.2.4 REVIEW OF ENVIRONMENTAL ASPECTS**

The next step involved identifying the environmental aspects associated with the organization's activities and services. An examination of the facility's operations helped to identify more detailed environmental aspects that were grouped into larger categories. The following nine categories were used at the pilot project facility.

- Air Emissions;
- Noise Emissions;
- Water Quality;
- Waste Management;
- Resource Use;

- Hazardous Materials Management;
- Emergency Response Plan;
- Land Management; and
- Administration.

Specific environmental aspects associated with the organization's operations could now be grouped into these nine categories. For example, painting operations was classified under Air Emissions, and energy consumption under Resource Use.

The environmental aspects were also linked with specific operations and impacts. For example, particulate matter, classified under Air Emissions, is generated by the grinding of metal parts and equipment operations in different workshops. The environmental impacts are the potential harmful effects to human health and the ambient air quality both inside and outside the facility. When collecting this information, the project team found it helpful to organize everything into a table similar to Table 3.

**TABLE 3: ENVIRONMENTAL ASPECTS**

Category	Environmental Aspect	Operations	Environmental Impact
Air Emissions	Particulate Matter	Grinding of metal parts and equipment operations.	Degradation of ambient air quality.

### 5.2.5 EVALUATION OF PERFORMANCE

The evaluation of performance compared with relevant internal criteria, external standards, regulations, codes of practice and sets of principles and guidelines will vary for every organization. All legal requirements depend on location and operations and other requirements are dependant on the organization. Some organizations may choose to only adhere to legislation and regulations, or have an extensive list of other requirements to which they subscribe.

If an organization does not know what other requirements apply to their operations, such as voluntary standards or codes of practice, a simple way to find out is to contact an organization with similar operations and find out what other requirements they have identified.

### 5.2.6 REVIEW OF ENVIRONMENTAL MANAGEMENT PRACTICES AND PROCEDURES

One of the longest and most labor-intensive sections of the IER was identifying all past and existing environmental management practices and procedures. If an organization has kept up an effective method for documenting and controlling their environmental records, the transition to an ISO EMS should be a smooth process. However, if the organization has not managed to keep a consistent method for documenting, controlling, filing and archiving environmental records, then the transition will prove to be a long and cumbersome task. This was the case at the pilot facility.

### **5.2.7 EVALUATION OF PROCUREMENT AND CONTRACTING**

Identification of existing procurement and contracting procedures as part of the IER is recommended by ISO 14004. The scope of an organization's EMS will determine whether monitoring supplier and contractor organizations will be considered in the EMS or not. If it is decided that suppliers and contractors will be included in an organization's EMS, procedures must be developed to address the organization's environmental concerns in regards to procurement and contracting activities and detail the monitoring process.

Examples of procurement practices include chemical procurement plans or alternative fuels programs. Organizations with existing programs designed to 'green' their operations through procurement should identify these in the IER. During the IER the organization may wish to identify any contracted work which has the potential to positively or adversely affect their environmental aspects. Once these firms have been identified they should be contacted to discuss their environmental management practices. An organization can choose to monitor the activities of any contracted organizations. For example, the organization may examine the operations of a hazardous waste disposal company it has contracted for work.

### **5.2.8 INCIDENTS OF NON-COMPLIANCE**

Previous incidents of non-compliance need be identified and recorded. This information will aid in development of an environmental baseline, and monitoring regulatory compliance.

### **5.2.9 COMPETITIVE ADVANTAGE**

While information is being collected for the IER, opportunities for competitive advantage will be identified. These advantages will be different for every organization. Competitive advantage can be measured in two ways; direct financial gain for the organization through cost savings, or increased positive exposure with potential suppliers and buyers. Types of cost savings associated with an EMS could be:

- chemical procurement programs (switching to cleaner, cheaper products);
- 'Paper Save' or 'No-Waste' programs; or
- compliance with regulations, decreasing the number of fines placed on the facility.

The greatest advantage may come with increased public and industry support once registration with ISO is received. Suppliers to certain organizations may be required to obtain ISO 14001 registration before business may continue.

### **5.2.10 INTERESTED PARTIES**

All interested parties must be identified in the IER. An interested party is described as an individual or group that can, positively or negatively, be affected by or have an effect on the organization's environmental management. For instance, at the pilot project facility, the storm/surface water runoff has the potential to enter the airport's water monitoring facility before being passed to the city's water supply. Should contaminants from the pilot project facility enter

this system, they have the potential to reach the city's water lines. This makes the airport an interested party, as they are obviously interested in the state of the pilot project facility's storm/surface water runoff.

All interested parties were identified in the IER and lines of communication developed for future EMS development.

#### **5.2.11 REQUIRED RESOURCES**

- EMS Manager
- EMS Task Group

Some of the techniques used in conducting the IER included:

- interviews;
- questionnaires;
- checklists;
- record review; and
- direct inspection and measurement.

#### **5.2.12 DOCUMENTATION REQUIREMENTS**

The pilot project facility IER contains the following sections:

- Introduction
  - EMS development and associated benefits to the organization;
  - Corporate EMS development compared with facility level EMS development;
  - Purpose of the IER in regards to the EMS.
- Methodology
  - ISO 14001 standard EMS requirements;
  - ISO 14001 IER guidelines, techniques, and tools;
  - Resources used and schedule for IER preparation;
  - Limitations associated with the IER and EMS development.
- Organization/Facility Description
  - Description of organization/facility operations;
  - Physical and organizational scope of IER and EMS.
- Legislative and Regulatory Requirements
  - Federal Legislation and Regulations;
  - Provincial Legislation and Regulations;
  - Municipal Legislation and Regulations;
  - Relevant internal and external criteria, standards, guidelines, and codes of practice.
- Environmental Aspect Identification
  - Definition of Environmental Aspects and their relation to organization's operations;
  - Environmental Categories, Aspects, and Impacts related to the organization's operations.

- Existing Practices and Procedures
  - Management practices and procedures;
  - Procurement and contracting practices and procedures;
  - Emergency Practices and Procedures;
  - Employee awareness and training practices and procedures.
- Incidents, Opportunities and Interested Parties
  - Previous incidents and non-compliance;
  - Opportunities for competitive advantage;
  - Interested parties.
- Gap Analysis against the ISO 14001 and 14004 Standards

The final IER document should contain an appendix that includes all resources used, i.e. checklists, tables, interviews etc.

### **5.2.13 IMPLEMENTATION CHALLENGES AND SUCCESSES**

- It will be easier for employee(s) assigned to conduct the IER to gather information if they have had some experience working with the organization. Familiarity with other employees, managers and supervisors, will help when organizing an EMS Task Group and with keeping this group on track. A new employee will need to spend time becoming familiar with the organization, their operations and co-workers. Orientation will increase the time required to perform the IER.
- Employees did not devote their full attention to the EMS Manager and his team's inquiries. A strong commitment from senior management to enforce the importance of time spent to help conducting the IER would have made collection of data easier.
- The most effective methods for data collection during the IER were questionnaires and direct inspection. Utilization of these methods allowed the EMS Manager and the EMS Task Group to collect data effectively and efficiently.
- Past environmental audits and baseline studies existed. However, translating audit and baseline information into EMS documentation was time consuming.
- The information collected from the IER proved to be essential to the overall development of the EMS. Information collected during the IER was kept in ISO format and allowed for easy transition into required EMS documentation
- A lot of time was spent waiting for responses from facility personnel.

- The objective was met, everything was documented appropriately, and employee awareness towards EMS development increased and opportunities for EMS development were identified.

## 5.3 ENVIRONMENTAL POLICY

**TABLE 4: OVERVIEW OF THE ENVIRONMENTAL POLICY DEVELOPMENT**

<b><i>What the Standard Requires</i></b>	
<p>Top management shall define the organization's environmental policy and ensure that it:</p> <ul style="list-style-type: none"> <li>• Is appropriate to the nature, scale and environmental impacts of its activities, products or service;</li> <li>• Includes a commitment to continual improvement and prevention of pollution;</li> <li>• Includes a commitment to comply with relevant environmental legislation and regulations, and with other requirements to which the organization subscribes;</li> <li>• Provides the framework for setting and reviewing environmental objectives and targets;</li> <li>• Is documented, implemented and maintained and communicated to all employees;</li> <li>• Is available to the public.</li> </ul>	
<b><i>Approach Taken at ASD</i></b>	<b><i>The Registrar's Observations</i></b>
<ul style="list-style-type: none"> <li>• The EMS Manager researched various texts, the departmental policy, and policies of other organizations, before developing the first draft.</li> <li>• Drafts were submitted to the EMS Steering Committee, FESSD, Personnel Division, and Management Executive for review and comments.</li> <li>• The policy is currently included in both the EMS Directives Manual and the ASD EMS Procedures Manual.</li> </ul>	<ul style="list-style-type: none"> <li>• The framework to set objectives and targets could be clearer in order to link the policy to the objectives.</li> <li>• A description of ASD activities and services in the policy could help confirm appropriateness.</li> </ul>
<b><i>Cost</i></b>	
<ul style="list-style-type: none"> <li>• 4 person weeks, \$3660</li> </ul> <p>See Appendix 1 for full breakdown of project costs.</p>	
<b><i>Recommendations</i></b>	
<ul style="list-style-type: none"> <li>• <b>Consider A Pledge</b> - The initial senior management commitment could have taken shape as an environmental pledge, a one-page document stating top management's commitment to the development of an ISO 14001 EMS and to providing the necessary resources. The pledge would be signed by the Director General (DG) and sent to all facility employees.</li> <li>• <b>Plan to Revise the Policy</b> - The policy should be developed in at least a draft format early on, and revised near the end of the Planning Principle to reflect the procedures for Aspects, Objectives and Targets.</li> </ul>	

### 5.3.1 BACKGROUND

The environmental policy is the driving force behind the entire EMS. It is the document which holds management to all commitments set out for the EMS.

### 5.3.2 IMPLEMENTATION

The EMS Manager developed the Environmental Policy. While performing research to write the policy the EMS Manager consulted various texts and references, Transport Canada's Environmental Policy, and consulted with EMS managers at ISO 14001-registered organizations.

The first draft of the Environmental Policy was completed and submitted to the following groups for review and comments:

- EMS Steering Committee (EMSCC);
- Facilities, Environment and Site Safety Division (FESSD); and
- ASD Management Executive.

Each group had suggestions and the policy was revised many times. Final approval of the policy was stalled when the EMS Manager suggested that the Environmental Policy be part of the EMS Directives Manual. At that time the manual was under revision. Top management decided to put approval of the Environmental Policy put on hold until the revisions were complete. On March 31, 1999 the Directives Manual was completed. The Directives Manual was submitted to top management June 19, 1999 with comments due by July 23 1999.

Also in June of 1999, the FESSD stated that the policy should be included in ASD Policies and Procedures Manual under a new "Environmental" section. The Environmental Policy was written into Manual format by the EMS Manager and submitted to FESSD for review and comments. Response from the FESSD was received and the policy was re-drafted. The policy was then submitted to the facility Personnel Division for review and comments. Comments received from the Personnel Division were reviewed and a fifth draft was prepared, resubmitted, and approved by the Personnel Division. On August 4 1999, the policy was submitted to the Management Executive for approval. Final approval of the policy was received 19 November 1999.

### 5.3.3 REQUIRED RESOURCES

Various resources were required to develop the policy:

- The EMS Manager required internet access, a telephone, a library with reference material, and a copy of Transport Canada Headquarters' EMS;
- Input by the EMS Steering Committee, FESSD, Facility Top Management, and various contacts;
- Translation of policy; and
- Printing Costs

### 5.3.4 DOCUMENTATION REQUIREMENTS

The policy is presently kept in two different documents, the EMS Directives Manual and the ASD Policies and Procedures Manual.

- Directives towards development, implementation and maintenance of the Environmental Policy are contained in the EMS Directives Manual.
- The facility's procedure for developing, implementing and maintaining the Environmental Policy is contained in the ASD Policies and Procedures Manual.

### 5.3.5 IMPLEMENTATION CHALLENGES AND SUCCESSES

The process associated with developing and implementing an environmental policy at the pilot project facility was a lengthy one. The following points are worth noting.

- Commitment at the facility was minimal in the beginning and the policy was not ready until after the planning stage. Something should have been put forward earlier to show top management's commitment to the project (i.e. making resources available etc.).
- Commitment could have taken shape as an environmental pledge, a one page document stating top management's commitment to the development of an ISO 14001 EMS and to providing the necessary resources. The pledge would be signed by the Director General (DG) and sent to all facility employees.
- Working with two completely separate management groups meant that many things could take twice as long to be reviewed and approved.
- Submitting the policy with the Directives Manual may have diminished its impact, as the manual was over forty-five pages in length.
- Including the policy as a new section in the ASD Policies and Procedures Manual brought it more attention. The format was more familiar to management and they may have taken the policy more seriously seeing it as a part of their "established" manuals.
- Confusion as to where the policy should be documented slowed down final approval. The Policy is presently kept in two different documents, the EMS Directives Manual and the ASD Policies and Procedures Manual. Keeping the environmental policy in two different documents leads to confusion and duplication of work. The environmental policy should be removed from the EMS Directives Manual and kept only in the ASD Policies and Procedures Manual.
- In order to ensure overall awareness of the environmental policy, it will need to be posted on internal and external websites and at strategic areas within the facility, communicated to contractors, and reviewed as part of EMS training.

## 6.0 APPLYING PRINCIPLE TWO: PLANNING

### 6.1 ENVIRONMENTAL ASPECTS

**TABLE 5: OVERVIEW OF THE ENVIRONMENTAL ASPECT DETERMINATION**

<b><i>What the Standard Requires</i></b>	
<p>The organization shall establish and maintain (a) procedure(s) to identify the environmental aspects of its activities, products or services that it can control and over which it can be expected to have an influence, in order to determine those which have or can have significant impacts on the environment. The organization shall ensure that the aspects related to these significant impacts are considered in setting its environmental objectives. The organization shall keep this information up-to-date.</p>	
<b><i>Approach Taken at ASD</i></b>	<b><i>The Registrar's Observations</i></b>
<ul style="list-style-type: none"> <li>• The list of aspects identified in Transport Canada's departmental EMS was circulated through the Facilities, Environment and Site Safety Division (FESSD) for comments. These comments along with facility inspections and interviews with supervisors were used to form a new listing of aspects.</li> <li>• The impacts associated with these aspects were later identified and their significance determined using a scoring methodology developed by the EMS Manager and EMS Steering Committee.</li> <li>• The EMS Significant Environmental Aspects Report documents the methodology used and the significant aspects identified.</li> </ul>	<ul style="list-style-type: none"> <li>• Criteria for determining aspect significance should include consideration of applicable legal and other requirements.</li> <li>• Development and delivery of training courses and other administrative activities should be reviewed for aspect identification.</li> </ul>
<b><i>Cost</i></b>	
<ul style="list-style-type: none"> <li>• 6 person weeks, \$5,490</li> </ul> <p>See Appendix 1 for full breakdown of project costs.</p>	
<b><i>Recommendations</i></b>	
<ul style="list-style-type: none"> <li>• The methodology used for identification of environmental aspects was adopted from the Transport Canada Headquarters' departmental EMS. This methodology, however, may not be the most effective and revision of this methodology should be considered.</li> </ul>	

#### 6.1.1 BACKGROUND

This is a very important step in EMS implementation as objectives and targets, environmental management programs, and development of operational controls are based on those aspects of the facility's activities, programs or services that can have significant environmental impacts.

The ASD facility's environmental aspects were identified during the IER. The impacts associated with these aspects and their significance were determined separately from the IER, during development of the EMS Environmental Aspects Significance Report.

### **6.1.2 IDENTIFICATION OF ENVIRONMENTAL ASPECTS**

The EMS Manager developed a documented procedure for identifying significant environmental aspects and keeping them up-to-date. This procedure can be found in the ASD EMS Environmental Aspects Significance Report.

During this identification process the EMS Manager conducted verbal interviews with supervisors of each area of the facility and recorded the activities associated with each operational and administrative area. A site map was used to help distinguish between the different operational areas. The following points summarize the identification process.

- Transport Canada's departmental EMS's list of environmental aspects was used as a starting point. When Transport Canada developed their EMS in 1997, the system was meant to include every branch of the department and therefore provides a good initial list of aspects that may be applicable to the ASD facility.
- This list was circulated through the Facilities, Environment and Site Safety Division for additional comments.
- A list of nine Environmental Categories was developed using results of additional comments, facility inspections, and interviews with the supervisors.
- Associated Environmental Aspects were identified.
- Environmental Impacts associated with the Environmental Aspects were identified.
- The Environmental Categories, Aspects, and Impacts were organized into a table, and linked to specific areas within the facility. For example: Room number E121 - Paint Shop, Environmental Aspect: Painting Operations.

### **6.1.3 EMS ENVIRONMENTAL ASPECTS SIGNIFICANCE REPORT**

Identification of associated environmental impacts and determination of significant environmental aspects are documented in the EMS Significant Environmental Aspects Report. Included in this report is a description of the methodology for determining significance of environmental aspects. The EMS Manager and EMS Steering Committee developed this methodology. The following points detail how that methodology was developed.

- Specific criteria were set, against which each aspect would be measured.
- An effective scoring system was developed and defined (numerical matrix).
- Legal and other requirements associated with each aspect were considered.
- A threshold or cut-off score for significance was established.
- Limitations associated with the entire process were identified.

Identification of significant environmental aspects and impacts at the ASD took approximately six weeks to complete.

### **6.1.4 REQUIRED RESOURCES**

- The EMS Manager required Internet access, a telephone, and library access to conduct research.
- The FESSD and contacts were required to review and comment on the procedure for identifying significant environmental aspects and impacts, and the proposed list of significant aspects and impacts.

### 6.1.5 DOCUMENTATION REQUIREMENTS

- Directives towards identification of environmental aspects and determination of significant environmental aspects are documented in the EMS Directives Manual.
- The identified environmental aspects are documented in the IER.
- The methodology for determining the significance of the facility's environmental aspects and impacts can be found in the EMS Environmental Aspects Significance Report.
- The facility's procedure for identifying significant environmental aspects is documented in the ASD EMS Procedures Manual.

### 6.1.6 IMPLEMENTATION CHALLENGES AND SUCCESSES

- The methodology used for identifying environmental aspects was adopted from the Transport Canada Headquarters' departmental EMS. This methodology, however, may not be the most effective. The EMS Manager suggests that revision of this methodology be considered as a corrective action.
- Corrective action will include a complete revision of the facility's list of identified significant environmental aspects. Environmental aspects will be made more specific. Rather than using generic statements such as "Hazardous Waste," a more detailed statement such as, "Waste water generated by operations carried out by non-destructive testing," would be used. Environmental aspects will also relate to specific operations performed by facility employees.

## 6.2 LEGAL AND OTHER REQUIREMENTS

TABLE 6: OVERVIEW OF LEGAL AND OTHER REQUIREMENTS

<b>What the Standard Requires</b>	
The organization shall establish and maintain a procedure to identify and have access to legal and other requirements to which the organization subscribes, that are applicable to the environmental aspects of its activities, products or services.	
<b>Approach Taken at ASD</b>	<b>The Registrar's Observations</b>
<ul style="list-style-type: none"> <li>• Contacted appropriate regulating bodies.</li> <li>• Researched legal texts and other sources.</li> <li>• List of legal requirements submitted to the Manager of Environmental Protection (MEP) for review and approval.</li> <li>• List of legal requirements associated with facility operations documented in Environmental Legal Requirements Report.</li> </ul>	<ul style="list-style-type: none"> <li>• Applicable Atomic Energy Control Act and associated regulations identified in the IER should also be identified in the central listing as stated in the applicable EMS procedure.</li> </ul>
<b>Cost</b>	
<ul style="list-style-type: none"> <li>• 6 person weeks, \$3,930</li> </ul> See Appendix 1 for full breakdown of project costs.	
<b>Recommendations</b>	
<ul style="list-style-type: none"> <li>• To maintain credibility of the exercise, involve personnel who are familiar with legal matters when identifying legal requirements.</li> </ul>	

### 6.2.1 BACKGROUND

Prior to EMS development, the Manager of Environmental Protection (MEP) already had a system in place for tracking new or revised legal requirements. As new legislation or other requirements are developed the MEP receives advance notices from various sources.

The first thing that needed to be established prior to determining legal and other requirements was what levels of regulations applied to the facility. The facility is located on crown land that is being leased to the Greater Airport Authority (private), the land is then rented back to the facility (federal). Therefore the land is federally owned and operated. Legally, this implies the province or the municipality has no authority and their regulations do not apply to the facility.

However, the federal government recently tabled a directive saying they would "attempt" to comply with all provincial regulations, which meet or exceed their own regulations or any that are not presently covered under federal legislation. According to this directive, federal establishments are to "attempt" to adhere to the strictest existing legislation. If they do not adhere they cannot be charged because they operate on crown-owned land.

The fact that provincial certificates of approval are required for various on-site operations, and the federal government's directive towards harmonization of regulations, led to consideration of

all regulations, both federal and provincial, as "legal requirements". In turn, industry codes of practice, and municipal by-laws are defined as "*other requirements*" of the EMS.

### 6.2.2 IMPLEMENTATION

Identification of applicable legal and other requirements took four weeks to complete. The first step in identification of legal and other requirements involved contacting the following parties to aid in the process:

- Manager, Environmental Protection;
- Members of the Facility, Environment and Site Safety Division;
- Representatives from the Ontario Ministry of Environment;
- Representatives from the Municipality of Ottawa-Carleton and City of Gloucester;
- Representatives from Environment Canada; and
- Representatives from Transport Canada.

The next step was performed by the EMS Manager and involved a search of various legal texts for applicable regulatory requirements. A legal staff is not available at the facility and those located at headquarters were unable to aid in the process. The following sources were used to identify legal requirements.

- Canadian Environmental Law Guide;
- ECO/LOG;
- Guide to Federal Environmental Legislation: A Resource Tool for Environment Canada's Facility Managers;
- Environment Canada and MOE websites; and
- Environment Canada, MOE and municipal environmental representative contacts.

Once all research was completed, a list of legal requirements was submitted to the Manager of Environmental Protection (MEP) for review and approval.

### 6.2.3 REQUIRED RESOURCES

- EMS Manager
- Manager, Environmental Protection.
- Members of the Facility, Environment and Site Safety Division.
- Representatives from the Ministry of Environment.
- Representatives from the Municipality of Ottawa-Carleton and Gloucester.
- Representatives from the Department of Environment.
- Representatives from Transport Canada

### 6.2.4 DOCUMENTATION REQUIREMENTS

- The facility's directives towards identifying legal and other requirements are documented in the EMS Directives Manual.

- The facility's procedures for identifying legal and other requirements, documenting them and ensuring that they are kept up to date are documented in the ASD Policies and Procedures Manual.
- Sources used for identifying legal requirements and a description of each can be found in the facility's Environmental Legal Requirements Report. This document contains a list of the facility's areas of operations and the legal requirements associated with them.

### **6.2.5 IMPLEMENTATION CHALLENGES AND SUCCESSES**

- There was no legal staff available for the pilot project. Legal personnel at Transport Canada Headquarters office in downtown Ottawa were unable to aid in the identification of legal requirements applying to the facility. The EMS Manager and site personnel spent a lot of time identifying potential regulations and determining if they applied to facility operations.
- As the EMS Manager and aiding staff are not trained in environmental legal matters, the credibility of this exercise could be questioned.

### **6.2.6 EVALUATING COMPLIANCE WITH LEGAL REQUIREMENTS**

Compliance with regulatory requirements is not mentioned in section 4.3.2 Identification of Legal and Other Requirements of the ISO 14001 standard. Instead it is discussed later in section 4.5.1 Monitoring and measurement. However, it makes sense to discuss compliance with legal requirements under this section.

If an organization does not have an effective monitoring program in place assessing compliance will prove to be a very difficult task. The organization has a few options:

1. Federal and provincial regulators can be asked to go through the building and identify any non-compliances.
2. The organization can attempt to determine themselves, if they are in compliance or not.
3. The organization can contract a private company to conduct a compliance audit.

The first option would be considered very risky. Possibly a deal could be struck between the regulating bodies and the organization detailing a time-constrained action plan where the organization would have two years to reach compliance before being charged.

The second option, although less of a financial cost than the third option, would be the most time consuming and possibly ineffective as there is no guarantee evaluation is performed properly.

The third option, a compliance audit conducted by a private firm to identify legal requirements and determine current level of compliance, would be the most effective. If an organization has committed to developing an effective EMS, this is a step it must take. Commitment to compliance is a key requirement for an ISO 14001 EMS and the most effective way to ensure compliance is through conducting a compliance audit. Although it is not required by the standard, many ISO 14001 registrars strongly suggest that organizations have a compliance audit completed prior to final registration.



## 6.3 OBJECTIVES AND TARGETS

**TABLE 7: OVERVIEW OF THE OBJECTIVES AND TARGETS**

<b><i>What the Standard Requires</i></b>	
<p>The organization shall establish and maintain documented environmental objectives and targets, at each relevant function and level with the organization.</p> <p>When establishing and reviewing its objectives, an organization shall consider the legal and other requirements, its significant environmental aspects, its technological options and its financial, operational and business requirements, and the views of interested parties.</p> <p>The objectives and targets shall be consistent with the environmental policy, including the commitment to prevention of pollution.</p>	
<b><i>Approach Taken at ASD</i></b>	<b><i>The Registrar's Observations</i></b>
<ul style="list-style-type: none"> <li>• All significant environmental aspects were included in the setting of objectives and targets.</li> <li>• Proposed list of environmental objectives and targets was reviewed and approved by EMSSC, FESSD, and Management Executive.</li> <li>• Progress towards set environmental targets was tracked through individual management programs.</li> <li>• A report detailing environmental objectives and targets; one for employee awareness and one for management approval will be included in the EMS Records Manual.</li> </ul>	<ul style="list-style-type: none"> <li>• As per ASD Policies and Procedures Manual environmental objectives and targets should be communicated via the internal web site. This web site was in the works and not yet available to employees at the time of the audit.</li> </ul>
<b><i>Cost</i></b>	
<ul style="list-style-type: none"> <li>• 5 person weeks, \$4,185</li> </ul> <p>See Appendix 1 for full breakdown of project costs.</p>	
<b><i>Recommendations</i></b>	

### 6.3.1 BACKGROUND

Environmental objectives and targets are set to help measure the facility's performance in managing its significant environmental aspects. All environmental aspects determined to be significant were included in the setting of the facility's environmental objectives and targets.

Environmental legal requirements should also be considered when setting environmental objectives and targets. An organization could make it an objective to determine if they are in compliance with all legal requirements that apply to their facility. If an organization knows that it is out of compliance with a specific regulation they could make it an environmental objective

to become compliant and the target could set the means and the time frame in which it means to do so.

### **6.3.2 IMPLEMENTATION**

The facility's environmental objectives and targets were developed immediately following the IER and determination of significance of the environmental aspects. The facility's objectives and targets were set in relation to the identified significant environmental aspects.

### **6.3.3 REQUIRED RESOURCES**

- EMS Manager researched and developed proposed list of environmental objectives and targets, and reviewed comments from the Facility, Environment and Site Safety Division, Management Executive and Steering Committee.
- Facility, Environment and Site Safety Division discussed and approved environmental objectives and targets.
- Management Executive approved EMS Directives Manual and environmental objectives and targets.
- Steering Committee approved EMS Directives Manual and environmental objectives and targets

### **6.3.4 DOCUMENTATION REQUIREMENTS**

- The facility's directives towards identifying its environmental objectives and targets are documented in the EMS Directives Manual.
- The facility's procedures for identifying its environmental objectives and targets are documented in the ASD EMS Procedures Manual.
- Reports detailing environmental objectives and targets, one for employee awareness and one for management approval, are being developed and will be included in the EMS Records Manual.

### **6.3.5 IMPLEMENTATION CHALLENGES AND SUCCESSES**

- Initially too many objectives and targets had been developed. It was soon realized that these targets were overly ambitious and could not all be achieved, and the list was scaled down to six objectives and eight targets.
- Selection of realistic performance indicators, and familiarization of staff in their use and reporting proved time-consuming.

## 6.4 ENVIRONMENTAL MANAGEMENT PROGRAM(S)

**TABLE 8: OVERVIEW OF THE ENVIRONMENTAL MANAGEMENT PROGRAM(S)**

<b>What the Standard Requires</b>	
<p>The organization shall establish and maintain (a) programme(s) for achieving its objectives and targets. It shall include:</p> <ul style="list-style-type: none"> <li>• designation of responsibility for achieving objectives and targets at each relevant function and level of the organization;</li> <li>• the means and time frame by which they are to be achieved.</li> </ul> <p>If a project relates to new developments and new or modified activities, products, or services, the programme(s) shall be amended where relevant to ensure that environmental management applies to such projects.</p>	
<b>Approach Taken at ASD</b>	<b>The Registrar's Observations</b>
<p>A program was developed for each objective and target and included:</p> <ul style="list-style-type: none"> <li>• assignment of a Coordinator(s);</li> <li>• establishment of tasks, timeframe and responsibilities;</li> <li>• defining how the program fits into the overall organizational structure;</li> <li>• defining what training requirements are required; and</li> <li>• ensuring employees receive environmental awareness training.</li> </ul>	<ul style="list-style-type: none"> <li>• Responsibilities for achieving objectives and targets are not identified at all levels of the organization.</li> <li>• Overall timeframe is set, but each action item is not formally detailed with responsibilities, timeframe and means, note that at this time two people are carrying most of the activities.</li> </ul>
<b>Cost</b>	
<ul style="list-style-type: none"> <li>• 22 person weeks, \$16,230</li> </ul> <p>See Appendix 1 for full breakdown of project costs.</p>	
<b>Recommendations</b>	

### 6.4.1 BACKGROUND

The purpose of having Environmental Programs is to ensure that the organization has a well-developed plan to achieve its objectives and targets. The presence of existing environmental management programs can greatly increase the organization's transition into a compliant ISO 14001 EMS. Existing data forms a baseline for setting environmental objectives and targets. If programs do not exist to achieve objectives and targets then they must be created.

At the ASD, very little data existed pertaining to the significant environmental aspects and no programs existed to achieve environmental objectives and targets.

#### **6.4.2 IMPLEMENTATION**

Environmental management programs were developed for the facility's environmental objectives and targets. A program was developed for each objective and target and includes the following:

- assignment of a Coordinator(s) and definition of his/her responsibilities associated with the program;
- establishment of tasks and assignment of responsibilities;
- establishment of time frame by which tasks are to be completed;
- defining how the program fits into the overall organizational structure;
- defining what training requirements are required for successful implementation of environmental program(s); and
- ensuring employees working in operational areas with environmental objectives and targets and programs present will receive environmental awareness training.

#### **6.4.3 REQUIRED RESOURCES**

- The EMS Manager and two summer students developed and presented proposed environmental management programs to achieve environmental objectives and targets.
- The Facility, Environment and Site Safety Division was responsible for approval of environmental management programs. Managers of the Division have each been assigned responsibility for one or more programs (coordinator).
- The Management Executive is responsible for final approval of environmental management programs.
- There is the potential for the facility to need to invest in monitoring equipment in order to implement a program.

#### **6.4.4 DOCUMENTATION REQUIREMENTS**

- The facility's directives towards developing, implementing and managing its environmental management programs are documented in the EMS Directives Manual.
- The facility's procedures for developing, implementing and managing its environmental management programs are documented in the ASD EMS Procedures Manual.
- Each environmental management program will have documentation for each area. This documentation will appear in the EMS Operational Controls Manual and will be made available to all appropriate personnel.
- Reporting requirements for both facility employees and the Management Executive must be developed and will be retained in the EMS Records Manual.

#### **6.4.5 IMPLEMENTATION CHALLENGES AND SUCCESSSES**

- The EMS Manager expressed that developing the environmental programs was difficult. Successful implementation will require the Management Executive to ensure that all required resources are made available.

## 7.0 APPLYING PRINCIPLE THREE: IMPLEMENTATION AND OPERATION

### 7.1 STRUCTURE AND RESPONSIBILITY

**TABLE 9: OVERVIEW OF STRUCTURE AND RESPONSIBILITY**

<b><i>What the Standard Requires</i></b>	
<p>Roles, responsibility and authorities shall be defined, documented and communicated in order to facilitate effective environmental management.</p> <p>Management shall provide resources essential to the implementation and control of the environmental management system. Resources include human resources and specialized skills, technology and financial resources.</p> <p>The organization's top management shall appoint (a) specific management representative(s) who, irrespective of other responsibilities, shall have defined roles, responsibilities and authority for:</p> <ul style="list-style-type: none"> <li>ensuring that environmental management system requirements are established, implemented and maintained in accordance with this standard;</li> <li>reporting on the performance of the environmental management system to top management for review and as a basis for improvement of the environmental management system.</li> </ul>	
<b><i>Approach Taken at ASD</i></b>	<b><i>The Registrar's Observations</i></b>
<ul style="list-style-type: none"> <li>Environmental consultant was hired to act as on-site EMS Manager.</li> <li>All EMS responsibilities for pilot project were absorbed by the EMS Manager and available students.</li> <li>Environmental Training and Responsibility Database was developed to help track and document all responsibilities associated with the EMS.</li> </ul>	(no findings)
<b><i>Cost</i></b>	
<ul style="list-style-type: none"> <li>6 person weeks, \$4,320</li> <li>Consulting and Training \$2,500</li> </ul> <p>See Appendix 1 for full breakdown of project costs.</p>	
<b><i>Recommendations</i></b>	
<ul style="list-style-type: none"> <li>Ensure sufficient human resources are made available to develop, establish and maintain the EMS.</li> </ul>	

#### 7.1.1 BACKGROUND

Prior to EMS development at ASD, the structure of environmental responsibility was as follows: The Manager, Environmental Protection and the Assistant Manager, Environmental Protection (Co-op student) report to the Chief, Facilities, Environment and Site Safety Division who reports

to the Director, Client and Internal Services who reports to the Management Executive (all Directors) and the Director General.

Environment Canada and Transport Canada (Environmental Programs) proposed the EMS Pilot Project to the ASD Management Executive. Included in this proposal were the services of an environmental consultant who would act as the on-site EMS Manager. The EMS Manager would be working with the Facility, Environment and Site Safety Division and would report EMS updates to the Division as well as to the ASD Management Executive. All EMS responsibilities were absorbed by the EMS Manager and available students over the course of the pilot project.

The EMS framework demands that all environmental responsibilities be clearly identified and documented. Prior to EMS development all environmental responsibilities were taken on by the Manager, Environmental Protection and his student. The new EMS framework would include the proper identification of all environmental responsibilities. This information would be documented in the Environmental Training and Responsibilities Database.

### **7.1.2 IMPLEMENTATION**

- In line with the ISO 14001 EMS framework, once the Planning stage was completed the identification of environmental responsibilities was a relatively straight-forward process. The responsibilities determined by the EMS linked to: the significant environmental aspects; legal and other requirements; environmental objectives and targets; programs; and operational controls. The next steps involved identifying the specific employees who are affected by the listed areas of the EMS.
- Reporting requirements had to be identified, records had to be developed, and communication between the different operational levels had to be established.
- The EMS Manager was supported with university students, with little help provided by the on-site environmental protection personnel.
- Communication of EMS-related materials remained consistent and effective until the Chief, FESSD left his position for other work. EMS progress, primarily the communication of EMS-related material between different levels of management, suffered a significant setback.
- The Environmental Training and Responsibility Database was developed to help track and document all responsibilities associated with the EMS.

### **7.1.3 REQUIRED RESOURCES**

- EMS Manager fees, 14 months of casual (student) help
- Cost of Responsibility Database
- Time of FESSD and ASD Management Executive

#### **7.1.4 DOCUMENTATION REQUIREMENTS**

- The standard requires that “roles, responsibilities and authorities shall be defined, documented and communicated.” ASD has chosen to document all of its environmental responsibilities within the Environmental Training and Responsibility Database.
- ASD Directives towards structure and responsibility are documented in the ASD EMS Directives Manual.
- ASD Procedures for structure and responsibility are documented in the ASD EMS Procedures Manual.

#### **7.1.5 IMPLEMENTATION CHALLENGES AND SUCCESSES**

- Employees can be resistant to taking on ‘new responsibilities’ and care was taken when introducing new duties. All environmental responsibilities associated with the planning stage of the EMS were shouldered by the EMS Manager and his assisting students. The implementation stage saw the majority of responsibilities remain within the FESSD, with most again falling on the EMS Manager.
- It is hard to effectively evaluate the impact of this element based on the work completed to date. All environmental objectives and targets initially set by ASD involved only the work of one member of the FESSD. Future objectives, targets and programs may involve a broader scope within ASD and therefore involve more employees. This could present some difficulties, as it would be adding to the existing responsibilities of ASD employees other than members of the FESSD. However, based on the EMS Awareness Training and support from the ASD Management Executive, new programs should be approved and adopted quickly with very little resistance from those expected to participate.
- The development and implementation of the ASD Environmental Training and Responsibility Database proved to be a very long and cumbersome task.
- There are concerns that upon the completion of the EMS Manager’s contract, his duties will be very difficult for the Manager, Environmental Protection and assistant to absorb on top of their existing responsibilities.

## 7.2 TRAINING, AWARENESS AND COMPETENCE

**TABLE 10: OVERVIEW OF TRAINING, AWARENESS AND COMPETENCE**

<b><i>What the Standard Requires</i></b>	
<p>The organization shall identify training needs. It shall require that all personnel whose work may create a significant impact upon the environment, have received appropriate training.</p> <p>It shall establish and maintain procedures to make its employees or members at each relevant function and level aware of:</p> <ul style="list-style-type: none"> <li>• the importance of conformance with the environmental policy and procedures and with the requirements of the environmental management system;</li> <li>• the significant environmental impacts, actual or potential, of their work activities and the environmental benefits of improved personal performance;</li> <li>• their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirements of the environmental management system including emergency preparedness and response requirements;</li> <li>• the potential consequences of departure from specified operating procedures.</li> </ul> <p>Personnel performing the tasks which can cause significant environmental impacts shall be competent on the basis of appropriate education, training and/or experience.</p>	
<b><i>Approach Taken at ASD</i></b>	<b><i>The Registrar's Observations</i></b>
<ul style="list-style-type: none"> <li>• A Strategy and Action Plan for the identification and delivery of all required environmental training was developed.</li> <li>• Training courses cover: TDG, WHMIS, spill response, EMS awareness, environmental legislation, objectives and targets, and operational controls.</li> <li>• Training requirements are tracked by the Environmental Training and Responsibility Database.</li> </ul>	<ul style="list-style-type: none"> <li>• The ASD Environmental Training and Responsibility Database provides a good system to identify required training.</li> <li>• At the time of the readiness assessment, all training requirements were not entered in the database. It is recommended that all training data be entered into the database.</li> </ul>
<b><i>Cost</i></b>	
<ul style="list-style-type: none"> <li>• 6 person weeks, \$4,710</li> <li>• Consulting and Training \$2,500</li> </ul> <p>See Appendix 1 for full breakdown of project costs.</p>	
<b><i>Recommendations</i></b>	
<ul style="list-style-type: none"> <li>• Extensive classroom-style training is not always necessary. Simple stand-up presentations on the facility floor and use of internal memos helped to increase awareness of various issues while saving time and money.</li> </ul>	

### 7.2.1 BACKGROUND

Prior to EMS development at ASD, the training, awareness and competence programs existing at ASD were as follows:

- The Manager, Environmental Protection provided the required TDG and WHMIS training to all applicable ASD employees. Records of this training were not kept up-to-date; and

- No spill response training was in place. Training had been provided to the Team Leaders (Managers on the floor) a few years back but had not been provided since. No records of this training were found. Personnel have a general knowledge of how to clean up a spill and the associated reporting requirements, but this information had not been documented anywhere.

The EMS Manager expressed to the FESSD that new training programs would have to be developed. These programs would require the participation of the FESSD members, as well as applicable ASD employees. ASD has identified all legally required environmental training. However, with the implementation of an EMS comes the introduction of new training responsibilities. These new training needs had to first be identified and assessed, and implementation plans developed for each.

### 7.2.2 IMPLEMENTATION

The ASD Management Executive has committed in its environmental policy to identifying and delivering all required environmental training. To help meet this commitment, the FESSD chose to make the identification of environmental training responsibilities an environmental target. A management program was developed, a coordinator was assigned responsibility, and a Strategy and Action Plan for the identification and delivery of all required environmental training was developed.

The Strategy and Action Plan focused on the types of training required both by the law and by the ASD EMS. Methods of delivery, resources required, and the extensiveness of these training requirements were identified as well. The purpose of this Plan was to identify all environmental training requirements, help implement any new training programs, and properly document existing programs. Table 11 lists the environmental training requirements identified at the ASD facility.

**Table 11: Environmental Training Requirements at ASD**

Name of Training	Description
Transportation of Dangerous Goods (TDG)	The TDG program is designed to educate applicable employees about the Transportation of Dangerous Goods Act and its regulations. Areas covered include, but are not limited to, the handling, offering for transport, the classification and documentation, and reporting of the transportation of dangerous goods.
Workplace Hazardous Materials Information System (WHMIS)	Outlines the responsibilities of ASD employers, employees, and suppliers identified by the WHMIS program. Training programs focus on; educating participants towards chemical hazards and their potential damaging effects, the labeling of hazardous materials and their associated material safety data sheets.
Spill Response (proposed)*	The spill response training program is designed to educate and prepare ASD employees whose work activities have the

	potential to significantly impact the environment. The program has been developed in accordance with federal best practices and provincial regulations. Applicable ASD employees are trained in spill prevention, effective spill response, and contact name and numbers. The spill response training program is a sub-section of the overall ASD environmental emergency response program.
ISO 14001 EMS: General Overview	This training session outlines the ISO 14001 EMS requirements, including an explanation of each section of the standard (4.1 through 4.6). Parallels are drawn between the general requirements and Transport Canada's departmental EMS as well as ASD's EMS.
EMS Awareness*	The EMS Awareness program is delivered to all ASD employees and is designed to focus on the following areas: <ol style="list-style-type: none"> <li>1. Environmental issues (Global &amp; Local);</li> <li>2. ASD EMS: General Outline of its Purpose; and</li> <li>3. ASD Environmental Policy: What it is and how it affects each ASD employee.</li> </ol>
Environmental Legislation and Regulations Awareness (proposed)*	The environmental legal requirements awareness program is delivered to all ASD employees who have environmental legal requirements associated with the operational areas in which they work. This training includes; a description of the environmental legislation and regulations, how this affects the employees' every day work and what legal action can be taken should ASD be found to be in noncompliance with these regulations.
Environmental Objectives, Targets, and Programs (proposed)*	ASD employees whose operations have associated environmental objectives, targets or management programs, derived from the ASD EMS receive awareness training in these specified areas. The program focuses on making applicable employees aware of the environmental objectives and targets associated with their work. Employees are also made aware of any environmental management programs which may have been created to help meet these set environmental objectives and targets and what responsibilities, if any, they have in regards to helping administer these program and reaching the set targets.
Environmental Operational Controls (proposed)*	ASD employees and contractors with identified significant environmental aspects associated with their operations receive training in applicable environmental operational controls. This training focuses on any "established documented procedures which cover situations where their absence could lead to deviations from the environmental policy and/or the environmental objectives and targets" (ISO 14001 Sub-clause 4.4.6 - Operational control.)

**\*Note: Training programs which have not yet been implemented at ASD are identified as 'proposed' programs.**

- The Manager, Environmental Protection is responsible for delivering all TDG, WHMIS, and spill response training. The EMS Manager and Manager, Environmental Protection are responsible for developing and delivering all other EMS related training.
- The EMS Awareness training, provided to all ASD employees, proved to be the most difficult. This training was grouped with the ASD Health and Safety Due Diligence training being provided to all employees. This combination added incentive to employees to come out and sign up for the EMS Awareness training. The delivery dates for this training were continuously pushed back, however, affecting the timeframe of the entire project.
- All other training/awareness programs, related to the EMS, are delivered as casual talks on the facility floor and as internal memos originating from the FESSD.
- A new spill response training program is not yet in place.
- All environmental training requirements at ASD are tracked by the Environmental Training and Responsibility Database.

### **7.2.3 REQUIRED RESOURCES**

- Costs associated with the development and delivery of EMS Awareness training.
- All ASD personnel were required to attend a half-hour training session.
- Some time was required to update records and enter information into the database for existing training programs (TDG and WHMIS).
- Members of the FESSD were required to contribute time for the development of all 'proposed' training programs.
- The delivery of these programs required the time of the Manager, Environmental Protection and the participating employees.

### **7.2.4 DOCUMENTATION REQUIREMENTS**

- The standard requires that records of all training be documented and maintained appropriately. Procedures were written for this element of the standard, and, training programs (procedures/protocols) needed to be documented as well.
- All training records were recorded electronically in the Environmental Training and Responsibilities Database.

### 7.2.5 IMPLEMENTATION CHALLENGES AND SUCCESSES

- The delivery of the EMS awareness training was continually delayed. Having this training delivered as part of the Due Diligence package was a great way to get people in the room and get their attention, but it was also the reason for delays. This was an implementation challenge for the pilot project, but the overall process was a success. Unfortunately, given the scope of the project, many developments were delayed as a result of the delayed training.
- Personnel were resistant to new training, reasoning they already know how to do their jobs.
- Management usually saw the value of the training, but there was occasional resistance from members of the FESSD who felt that certain training programs were not required. This resistance significantly delayed related EMS developments.
- It was discovered that extensive classroom-style training was not always necessary. For example, a simple stand-up presentation on the facility floor to employees regarding Underground Storage Tank use is sufficient to be classified as an Operational Control training session. This can save considerable time and money. The use of internal memos also helped to increase awareness of various issues. For example, the internal legal notice/memo distributed to all applicable Managers, helped to spread EMS responsibilities, while still making employees aware of environmental legal requirements.

## 7.3 COMMUNICATION

**TABLE 12: OVERVIEW OF COMMUNICATION**

<b><i>What the Standard Requires</i></b>	
<p>The organization shall establish and maintain procedures for:</p> <ul style="list-style-type: none"> <li>• internal communication between the various levels and functions of the organization;</li> <li>• receiving, documenting and responding to relevant communication from external interested parties.</li> </ul> <p>The organization shall consider processes for external communication on its significant environmental aspects and record its decision.</p>	
<b><i>Approach Taken at ASD</i></b>	<b><i>The Registrar's Observations</i></b>
<ul style="list-style-type: none"> <li>• The Manager, Environmental Protection and the Facility, Environment and Site Safety Division (FESSD) are responsible for communicating all internal environmental issues.</li> <li>• The Manager, Environmental Protection is responsible for all external communications involving environmental matters.</li> </ul>	<ul style="list-style-type: none"> <li>• (no comments)</li> </ul>
<b><i>Cost</i></b>	
<ul style="list-style-type: none"> <li>• 1 person week, \$915</li> </ul> <p>See Appendix 1 for full breakdown of project costs.</p>	
<b><i>Recommendations</i></b>	
<ul style="list-style-type: none"> <li>• Ensure communication procedures cover all forms of environment-related discussions with interested parties, including phone or face-to-face conversations.</li> </ul>	

### 7.3.1 BACKGROUND

Prior to EMS development, all internal and external communications involving environmental issues were conducted in accordance with federal government directives.

An ISO 14001 EMS requires that all internal and external communications be documented and maintained as environmental records. The present Manager, Environmental Protection has attempted to do this with all his communications. However, with the high turnover of different people working in ASD Environmental Protection, many past communications have been misplaced or were not maintained in the first place.

### 7.3.2 IMPLEMENTATION

The Facility, Environment and Site Safety Division (FESSD) is responsible for communicating all internal environmental issues. More specifically, the Manager, Environmental Protection (MEP) is responsible for handling all environmental issues of minor concern. Issues involving a major change in ASD operations, or requiring funding outside of his budget, would be presented

to the FESSD at division meetings by the MEP. Any major environmental issue would be communicated from the MEP to the Chief, FESSD to the Director, Client and Internal Services to the ASD Management Executive and the Director General. Emergency situations are communicated according to ASD emergency procedures.

Internal communications take the form of e-mails and memos. The originator of the internal communication is responsible for maintaining a record of any environmental issue.

The Manager, Environmental Protection (MEP) is responsible for all external communications involving environmental matters. Examples include: communicating with "green" products suppliers, contractors for hazardous waste removal, regulating bodies for information on environmental legislation, or the airport authority to discuss different environmental issues. The MEP is responsible for maintaining a record of all external environmental communications. Major environmental concerns resulting from any external communication are reported to the Management Executive, following the same process described for internal communications.

ASD's directives and procedures towards internal and external communications involving environmental issues are documented in the ASD EMS Directives and Procedures Manuals respectively.

The primary objective of this element is to ensure that ASD effectively documents and maintains all communications involving environmental issues. This element involved writing the discussed procedures and ensuring that the EMS Manager and Manager, Environmental Protection were aware of these procedures and followed them accordingly.

### **7.3.3 REQUIRED RESOURCES**

Time was required to document procedures and ensure that the appropriate people were aware of them and followed them accordingly.

### **7.3.4 DOCUMENTATION REQUIREMENTS**

- ISO 14001 requires that the organization establish and maintain documented procedures for both internal and external methods of communicating environmental issues. ASD has met these requirements. Included within these procedures are the recording requirements for all communications.
- Developing new files for environmental communications was a documentation requirement associated with this element.

### **7.3.5 IMPLEMENTATION CHALLENGES AND SUCCESSES**

It is hard to document every communication an employee has regarding the environment. Messages sent through e-mail are easily recorded and official internal/external memos are maintained within the appropriate file. However, within a small operation, many

communications are carried out over the phone or face to face. Important discussions involving the environment can take place in such a situation, and there would be no document to prove that the discussion took place. The Manager, Environmental Protection and EMS Manager must endeavour to document all environmentally related discussions with interested parties.

The Manager, Environmental Protection and EMS Manager are responsible for maintaining appropriate records of their individual environmentally related communications. Internal recipients of environmental communications are responsible for maintaining these documents as well.

## 7.4 EMS DOCUMENTATION

**TABLE 13: OVERVIEW OF EMS DOCUMENTATION**

<b><i>What the Standard Requires</i></b>	
The organization shall establish and maintain information, in paper or electronic form, to: describe the core elements of the management system and their interaction; provide direction to related documentation.	
<b><i>Approach Taken at ASD</i></b>	<b><i>The Registrar's Observations</i></b>
<ul style="list-style-type: none"> <li>• The ASD EMS is documented on four different levels:</li> <li>• ASD EMS Directives Manual;</li> <li>• ASD EMS Procedures Manual;</li> <li>• ASD EMS Operational Control Manual; and</li> <li>• ASD EMS Records Manual.</li> <li>• Directives and procedures were developed for each element of the ISO 14001 standard.</li> </ul>	<ul style="list-style-type: none"> <li>• (no comments)</li> </ul>
<b><i>Cost</i></b>	
<ul style="list-style-type: none"> <li>• 3 person weeks, \$2,745</li> <li>• Consulting and Training \$2,500</li> </ul> See Appendix 1 for full breakdown of project costs.	
<b><i>Recommendations</i></b>	
<ul style="list-style-type: none"> <li>• Writing directives and procedures for every element eliminates confusion as to what and what not to document.</li> <li>• A database is an effective way of gathering all EMS-related documentation and making it accessible to those needing EMS-related information, including auditors.</li> </ul>	

### 7.4.1 BACKGROUND

No description of the documents and means used to manage environment issues existed prior to EMS development at ASD. EMS directives and procedures had to be written for each element of the ISO 14001 standard. Operational controls were in place for the majority of ASD operations, however, these controls did not consider the environmental impacts of the operations. All operations with related significant environmental impacts had to have appropriate operational controls developed.

### 7.4.2 IMPLEMENTATION

It was decided that the ASD EMS would be documented on four different levels:

- ASD EMS Directives Manual;
- ASD EMS Procedures Manual;
- ASD EMS Operational Control Manual; and
- ASD EMS Records Manual.

**Level 1 ASD EMS Directives Manual**

The ASD EMS Directives Manual summarizes the policies and goals associated with establishing and maintaining each of the elements which makes up the ASD ISO 14001-based EMS.

**Level 2 ASD EMS Procedures Manual**

The ASD EMS Procedures Manual lists the managerial and administrative procedures developed to establish and maintain each of the elements which make up the ASD EMS.

**Level 3 ASD EMS Operational Controls Manual**

The ASD EMS Operational Controls Manual lists all the operational procedures developed to ensure the work processes are in line with ASD's environmental policy, objectives and targets.

**Level 4 ASD EMS Records Manual**

The ASD EMS Records Manual documents all environmental records kept by ASD for its EMS.

All ASD EMS related documentation is maintained electronically in a database. This database was designed to track the documentation associated with each element of the ASD EMS.

### **7.4.3 REQUIRED RESOURCES**

The development and maintenance of both the original EMS documents and the electronic database, proved to be a very time consuming process for the EMS Manager and two assisting students.

### **7.4.4 DOCUMENTATION REQUIREMENTS**

Certain elements of the ISO 14001 standard require that documented procedures be "established and maintained". Rather than spend time determining if the element required written procedures or not, it was decided to develop directives and procedures for each element of the ISO 14001 standard. The different levels of documentation are listed in section 7.4.2.

### **7.4.5 IMPLEMENTATION CHALLENGES AND SUCCESSES**

The documentation requirements associated with the development of an ISO 14001 EMS were a major burden. The requirements of this standard could be justified for a large organization with thousands of employees, a legal staff, document control people, quality control people, auditing personnel, etc. But at a small facility like ASD, the documentation requirements seemed excessive. The ASD EMS documentation is viewed by very few personnel, and the development of a complex system to control these documents did not seem justified. The documenting of certain operational controls also raised some concerns with ASD personnel. The need for documenting something that has been done correctly for 10 years, and which everyone does correctly already, was questioned. The issue of due diligence helped to explain this need to these individuals.

Documenting the directives and procedures for each ISO element, though not required by the standard, proved to be a very effective tool. Writing directives and procedures for every element eliminated confusion as to what and what not to document and allayed any concern that something would be missed.

The ASD EMS database proved to be an effective way of gathering all EMS-related documentation and making it accessible to those needing EMS information. The database also proved to be an excellent tool for auditing.

## 7.5 DOCUMENT CONTROL

**TABLE 14: OVERVIEW OF DOCUMENT CONTROL**

<b><i>What the Standard Requires</i></b>	
<p>The organization shall establish and maintain procedures for controlling all documents required by this standard to ensure that:</p> <ul style="list-style-type: none"> <li>• they can be located;</li> <li>• they are periodically reviewed, revised as necessary and approved for adequacy by authorized personnel;</li> <li>• the current versions of relevant documents are available at all locations where operations essential to the effective functioning of the environmental management system are performed;</li> <li>• obsolete documents are promptly removed from all points of issue and points of use, or otherwise assured against unintended use;</li> <li>• any obsolete documents retained for legal and/or knowledge preservation purposes are suitably identified.</li> </ul> <p>Documentation shall be legible, dated (with dates of revision) and readily identifiable, maintained in an orderly manner, and retained for a specific period. Procedures and responsibilities shall be established and maintained concerning the creation and modification of the various types of document.</p>	
<b><i>Approach Taken at ASD</i></b>	<b><i>The Registrar's Observations</i></b>
<ul style="list-style-type: none"> <li>• Directives and Procedures for the control of all EMS documents are included in the respective EMS manuals.</li> <li>• All EMS document control information, including revisions and distribution list, is maintained electronically in the EMS database.</li> </ul>	<ul style="list-style-type: none"> <li>• Evidence of approval of documents is not always available.</li> <li>• Document approval procedure is generic and does not reflect different approval authorities for different EMS documents.</li> </ul>
<b><i>Cost</i></b>	
<ul style="list-style-type: none"> <li>• 1 person week, \$915</li> </ul> <p>See Appendix 1 for full breakdown of project costs.</p>	
<b><i>Recommendations</i></b>	

### 7.5.1 BACKGROUND

Document Control methods used by the ASD Environmental Protection group prior to EMS development were poor. Frequent position changes over the past five years had left the group's filing system in disorder. Group members have not had the time to bring the filing system up to speed. Unfortunately this was a major contributor to delays for all EMS developments.

### 7.5.2 IMPLEMENTATION

The ISO standard requires development, implementation and maintenance of effective document control procedures. All EMS documentation is effectively controlled, but other ASD environmental protection documents are not.

Each ASD EMS document has a version number located on each page. All documents are tracked in a database which records revisions, reason for revision, distribution list and retention times of obsolete documents. This database is maintained by the EMS Assistant.

### **7.5.3 REQUIRED RESOURCES**

Considerable time was spent going through the environmental protection group's filing system, developing a document control procedure for EMS-related documents, and developing the database used to track document control.

### **7.5.4 DOCUMENTATION REQUIREMENTS**

Directives and Procedures for the control of all EMS documents are included in the respective EMS manuals.

All EMS document control information is maintained electronically in the EMS database.

### **7.5.5 IMPLEMENTATION CHALLENGES AND SUCCESSES**

Developing and implementing an ISO 14001-compliant document control system at ASD seemed unnecessarily excessive at some points. Document control does however prove to be very effective when handling operational control procedures or identifying legal requirements. Controlling these types of documents will prove to be very helpful when future amendments are made. A simple electronic tracking system for document control will prove beneficial as well.

## 7.6 OPERATIONAL CONTROL

**TABLE 15: OVERVIEW OF OPERATIONAL CONTROL**

<b><i>What the Standard Requires</i></b>	
<p>The organization shall identify those operations and activities that are associated with the identified significant environmental aspects in line with its policy, objectives and targets. The organization shall plan these activities, including maintenance, in order to ensure that they are carried out under specified conditions by:</p> <ul style="list-style-type: none"> <li>• establishing and maintaining documented procedures to cover situations where their absence could lead to deviations from the environmental policy and the objectives and targets;</li> <li>• stipulating operating criteria in the procedures;</li> <li>• establishing and maintaining procedures related to the identifiable significant environmental aspects of goods and services used by the organization and communicating relevant procedures and requirements to suppliers and contractors.</li> </ul>	
<b><i>Approach Taken at ASD</i></b>	<b><i>The Registrar's Observations</i></b>
<ul style="list-style-type: none"> <li>• Development of these procedures involved: <ul style="list-style-type: none"> <li>○ interviewing employees;</li> <li>○ researching potential improved environmental practices;</li> <li>○ approval of procedure by various levels of ASD management;</li> <li>○ implementation of the procedure;</li> <li>○ training of affected employees; and</li> <li>○ documenting the procedure in the appropriate ASD manuals.</li> </ul> </li> <li>• Operational controls and procedures are listed in the EMS Operational Control Manual.</li> </ul>	<ul style="list-style-type: none"> <li>• The internal audits identified that operational controls and related procedures had not been updated with environmental considerations.</li> </ul>
<b><i>Cost</i></b>	
<ul style="list-style-type: none"> <li>• 15 person weeks, \$10,605</li> </ul> <p>See Appendix 1 for full breakdown of project costs.</p>	
<b><i>Recommendations</i></b>	

### 7.6.1 BACKGROUND

As an aircraft maintenance facility, ASD has countless numbers of operational manuals, including manuals from the manufacturers of the parts and equipment used etc., and the ASD Maintenance Control Manual. The ASD Maintenance Control Manual - Policies and Procedures contains detailed operation-specific procedures. However, these manuals do not discuss the environmental impacts of these operations, or what should be done to reduce/prevent these impacts.

There were a few 'draft' procedures developed in the past for such environmental aspects as hazardous waste, hazardous materials, ODS management, anti/deicing activities, and spill

procedures. None of these procedures had been approved however, and Environmental Protection staff at ASD were unaware of most of them. The procedures were out-of-date and required major revisions.

### **7.6.2 IMPLEMENTATION**

The ISO 14001 standard requires that operational controls be in place for each operation with an associated significant environmental aspect. These controls/procedures must explain how the employees involved in this operation are aware of the associated potential environmental impacts and that preventative measures are being taken. The procedure should indicate what the significant aspect is and what its impacts on the environment are. If employees are unaware of these procedures and their purpose, they should receive operational control awareness training on the subject.

Developing the appropriate operational controls for the ASD EMS proved to be a long and tedious process, and still continues. Of the twelve aspects determined to be significant, approximately half required development of new operational procedures [note: the remaining six significant aspects were grouped under the Emergency Response Plan (ERP) category, and would be covered by the ASD ERP].

Development of these procedures involved interviewing employees, researching potential improved environmental practices, approval of procedures by various levels of ASD management, implementation of the procedures, training of affected employees, and documenting the procedures in the appropriate ASD manuals.

### **7.6.3 REQUIRED RESOURCES**

The time and support of different individuals at ASD were imperative to the development and implementation of EMS operational controls. This element required the participation and cooperation of the employees working on the hangar floor and the different levels of ASD management.

### **7.6.4 DOCUMENTATION REQUIREMENTS**

An EMS Operational Control Manual was developed to help meet documentation requirements. This manual acts as a road map to all applicable operation documentation at ASD. For example, for the significant aspect 'painting operations', the Manual would indicate where the MCM Refinishing Shop procedures, the provincial Certificate of Approval, and any other applicable documentation could be found.

### **7.6.5 IMPLEMENTATION CHALLENGES AND SUCCESSES**

The entire Management Executive at ASD and most of middle management saw the value in developing these procedures. They understand the meaning of due diligence, and that development of an EMS can reduce their liability. However, resistance from some members of

middle management, and the concerns expressed by operational employees regarding formal documentation of their activities, continually delayed the development of EMS-related operational controls. Environmental Protection staff at the hangar were frequently "too busy" to review and provide comments on the various operational controls. This point alone stalled the project for months.

There are at the very least 'draft' procedures for each operation with an associated significant aspect. Based on the time required thus far to obtain approval for procedures, it will probably be another year before all operational control procedures required by the ISO 14001 standard are finalized.

## 7.7 EMERGENCY PREPAREDNESS AND RESPONSE

**TABLE 16: OVERVIEW OF EMERGENCY PREPAREDNESS AND RESPONSE**

<b><i>What the Standard Requires</i></b>	
<p>The organization shall establish and maintain procedures to identify potential for and respond to accidents and emergency situations, and for preventing and mitigating the environmental impacts that may be associated with them.</p> <p>The organization shall review and revise, where necessary, its emergency preparedness and response procedures, in particular, after the occurrence of accidents or emergency situations.</p> <p>The organization shall also periodically test such procedures where practicable.</p>	
<b><i>Approach Taken at ASD</i></b>	<b><i>The Registrar's Observations</i></b>
<ul style="list-style-type: none"> <li>• Responsibility was assigned to the Manager, Environmental Protection and the Manager, Site Safety and Support with advice provided by the EMS Manager.</li> <li>• Development of the ERP involves: <ul style="list-style-type: none"> <li>○ conducting an impact assessment of ASD operations;</li> <li>○ developing appropriate response procedures;</li> <li>○ training all affected personnel; and</li> <li>○ testing the overall plan.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• These procedures need to be reviewed and revised where necessary, in particular after the occurrence of accidents or emergency situations.</li> </ul>
<b><i>Cost</i></b>	
<ul style="list-style-type: none"> <li>• 1 person week, \$915</li> </ul> <p>See Appendix 1 for full breakdown of project costs.</p>	
<b><i>Recommendations</i></b>	

### 7.7.1 BACKGROUND

The ASD facility used to be part of the Ottawa Airport. As part of the airport, ASD was included in the overall Emergency Response Plan (ERP). When Transport Canada divested the Ottawa Airport in 1995, ASD was left as the lone federal facility at the airport. An ASD-specific ERP had been developed in the past, but there was some confusion as to which plan was used - the ASD plan or the Ottawa Airport plan. Prior to EMS development at ASD, the facility was in the preliminary stages of revising the ERP.

The ISO 14001 standard requires that a fully documented and tested ERP be in place. The ERP must include every aspect of emergency response, not just spill response and leak detection. Many pieces of the ERP existed at ASD, but they were not consolidated in one place.

### **7.7.2 IMPLEMENTATION**

The FESSD decided to make the development and implementation of a revised ERP an environmental objective and set a target of Summer 2000 for preparation of final documentation. Responsibility for this objective and target was assigned to the Manager, Environmental Protection and the Manager, Site Safety and Support. The EMS Manager provided advice to both Managers and frequently researched documents that could aid in the development of an overall ERP. 'Draft' spill response procedures and other major pieces of the overall ASD ERP, such as a building Fire Plan, have been developed. Members of the FESSD are working towards having the new ERP in place by Summer 2000.

### **7.7.3 REQUIRED RESOURCES**

Development of the ERP involves conducting an impact assessment of ASD operations (information was derived from existing EMS documentation), developing appropriate response procedures, training all effected personnel, and testing the overall plan. This will require considerable time and money.

### **7.7.4 DOCUMENTATION REQUIREMENTS**

The ISO 14001 standard requires that the organization maintain, and test regularly, a documented ERP. Development of the ERP is still in progress.

### **7.7.5 IMPLEMENTATION CHALLENGES AND SUCCESSES**

Developing, implementing and testing an ERP for ASD was not within the original scope of this project. The EMS Manager provided his expertise and the time of his students to assist in development of a revised ERP. Unfortunately, progress slowed due to time-demands on other ASD personnel. At the conclusion of the pilot project, ASD was still working towards the Summer 2000 deadline for a revised ERP.

## 8.0 APPLYING PRINCIPLE FOUR: CHECKING AND CORRECTIVE ACTION

### 8.1 MONITORING AND MEASUREMENT

**TABLE 17: OVERVIEW OF MONITORING AND MEASUREMENT**

<b><i>What the Standard Requires</i></b>	
<p>The organization shall establish and maintain documented procedures to monitor and measure, on a regular basis, the key characteristics of its operations and activities that can have a significant impact on the environment. This shall include the recording of information to track performance, relevant operational controls and conformance with the organization's objectives and targets.</p> <p>Monitoring equipment shall be calibrated and maintained and records of this process shall be retained according to the organization's procedures.</p> <p>The organization shall establish and maintain a documented procedure for periodically evaluating compliance with relevant environmental legislation and regulations.</p>	
<b><i>Approach Taken at ASD</i></b>	<b><i>The Registrar's Observations</i></b>
<ul style="list-style-type: none"> <li>• Identified areas of operations requiring monitoring or measurement, and an appropriate means of recording the information.</li> <li>• Determining compliance with applicable environmental legal and other requirements.</li> <li>• Assigned responsibility for monitoring and measurement components of operational procedures.</li> </ul>	<ul style="list-style-type: none"> <li>• Although specific external compliance audits have been conducted in the past for TDG and Waste management, no complete compliance audit has been conducted to date. [A compliance program has been developed and is presently being actioned to cover all applicable legislation and other requirements.]</li> <li>• Reference to record keeping and/or monitoring are present in EMS Programs surveyed, but there should be a clearer reference, i.e. the 'step' should be identified as monitoring.</li> <li>• Tanks – the description could be more prescriptive, i.e. steps to take.</li> <li>• Air Quality – Action is 'Investigation of Monitoring Options' but it should include a reference to who will complete investigation and the timeframe for delivery.</li> <li>• Monitoring of equipment is referenced in the procedure, but a list of equipment requiring maintenance should be cross-referenced.</li> <li>• Manager of Environmental Protection receives regular updates on compliance.</li> </ul>
<b><i>Cost</i></b>	
<ul style="list-style-type: none"> <li>• 9 person weeks, \$5,895</li> </ul> <p>See Appendix 1 for full breakdown of project costs.</p>	
<b><i>Recommendations</i></b>	

### 8.1.1 BACKGROUND

Very little monitoring and measurement was being performed at ASD when EMS development first started. Many monitoring and measurement programs had existed at ASD in the past, but they had been abandoned due to budget cuts and frequent staffing changes.

Examples of monitoring and measurement had included:

- monitoring of the level of the used oil underground storage tank;
- monitoring of air emissions from the paint shop;
- monitoring for potential groundwater contamination;
- monitoring surface runoff for water quality; and
- monitoring hazardous waste produced by the facility.

The Manager, Environmental Protection keeps close watch on all regulations pertaining to the hazardous waste generated by the facility (both federal and provincial regulations). However, no other compliance monitoring was being done at ASD.

### 8.1.2 IMPLEMENTATION

The ASD EMS requires the following monitoring or measurement practices be in place:

- underground storage tank monitoring (capacity and leak detection);
- monitoring of mechanical equipment used in the paint booth;
- measuring the amount of anti-icing fluid used;
- ODS inventory;
- hazardous waste inventory;
- identification and tracking of training requirements;
- identification and tracking of environmental responsibilities;
- identification and tracking of environmental legal requirements;
- compliance audits;
- internal EMS audits;
- monitoring the progress of all objectives, targets and programs; and
- tracking internal and external environment-related communications.

Implementing all of these different programs took a long time. There was no set list, such as the one above, to begin with. New areas were constantly being identified which required monitoring or measurement and an appropriate means of recording the information.

Determining ASD's compliance with applicable environmental legal and other requirements proved to be a huge task as well. A separate action plan was developed to conduct a thorough compliance audit which was scoped over the course of eight months. Legal and other requirements were identified and affected employees were made aware of these requirements.

### **8.1.3 REQUIRED RESOURCES**

Responsibility for monitoring and measurement components of operational procedures (e.g. UST, anti-icing etc.) had to be defined, and participation of employees from outside the FESSD was required.

The legal and other requirements' identification, tracking, awareness notices, and compliance audit required a tremendous amount of time. This alone could have been a separate project for one individual over the entire course of the pilot project. The compliance audit action plan is not scheduled for completion until well beyond the completion date of the pilot project.

### **8.1.4 DOCUMENTATION REQUIREMENTS**

Appropriate records of all monitoring and measurement activities must be maintained. Most environmental records are maintained electronically in an EMS database. Initially establishing records and then maintaining them can be tedious and time consuming. However, once the system is in place and personnel are aware of their responsibilities in relation to environmental records, maintenance should be minimal.

### **8.1.5 IMPLEMENTATION CHALLENGES AND SUCCESSES**

- Convincing the Manager, Environmental Protection of the need for certain monitoring and measurement programs more often than not, proved to be a long process.
- The introduction of new responsibilities associated with monitoring and management presented problems as well.
- A large investment of time and effort was required to establish monitoring and measurement records.

## 8.2 NON-CONFORMANCE AND CORRECTIVE AND PREVENTATIVE ACTION

**TABLE 18: OVERVIEW OF NON-CONFORMANCE AND CORRECTIVE & PREVENTATIVE ACTION**

<b><i>What the Standard Requires</i></b>	
<p>The organization shall establish and maintain procedures for defining responsibility and authority for handling and investigating non-conformance, taking action to mitigate any impacts caused and for initiating and completing corrective and preventative action.</p> <p>Any corrective and preventative action taken to eliminate the causes of actual and potential non-conformances shall be appropriate to the magnitude of problems and commensurate with the environmental impact encountered.</p> <p>The organization shall implement and record any changes in the documented procedures resulting from corrective and preventative action.</p>	
<b><i>Approach Taken at ASD</i></b>	<b><i>The Registrar's Observations</i></b>
<ul style="list-style-type: none"> <li>• A non-conformance can be identified through an internal or external EMS audit, the Management Executive EMS Review or an observation made by an ASD employee.</li> <li>• Results of the first Internal EMS Audit led to several major corrective actions and many minor ones.</li> </ul>	<ul style="list-style-type: none"> <li>• Procedure is in place and non-conformance reports are part of the EMS Audit.</li> <li>• Corrective actions are not noted, therefore it is not possible to assess appropriateness, implementation and recording of actions.</li> </ul>
<b><i>Cost</i></b>	
<ul style="list-style-type: none"> <li>• 1 person week, \$915</li> </ul> <p>See Appendix 1 for full breakdown of project costs.</p>	
<b><i>Recommendations</i></b>	

### 8.2.1 BACKGROUND

There were no formal non-conformance or corrective and preventive action procedures in place at ASD prior to EMS development. Corrective and preventive actions had been taken in the past, however, these actions were not formally documented.

### 8.2.2 IMPLEMENTATION

A non-conformance can be identified through an internal or external EMS audit, the Management Executive EMS Review or an observation made by an ASD employee. Those identified through audits and reviews are documented and the necessary corrective actions identified and carried out. A non-conformance raised outside of an audit or review, is reviewed separately.

Results of the first Internal EMS Audit led to several major corrective actions and many minor ones.

### **8.2.3 REQUIRED RESOURCES**

Time was required to develop the appropriate procedures and associated records. Implementing corrective actions and developing preventive actions proved to be time-consuming as well.

### **8.2.4 DOCUMENTATION REQUIREMENTS**

The procedure must be documented, and records of all non-conformances and corrective and preventive actions must be completed and maintained.

### **8.2.5 IMPLEMENTATION CHALLENGES AND SUCCESSES**

Some major non-conformances identified through the first Internal EMS Audit have associated corrective actions which will not fit within the scope of the pilot project. These corrective actions, and the work involved, will have to be absorbed by ASD personnel.

The process of auditing and reviewing the EMS allowed for an excellent evaluation of the system and identified many different non-conformances. By implementing the appropriate corrective actions, ASD is meeting its commitment to continual improvement.

## 8.3 RECORDS

**TABLE 19: OVERVIEW OF RECORDS**

<b><i>What the Standard Requires</i></b>	
<p>The organization shall establish and maintain procedures for the identification, maintenance and disposition of environmental records. These records shall include training records and the results of audits and reviews.</p> <p>Environmental records shall be legible, identifiable and traceable to the activity, product or service involved. Environmental records shall be stored and maintained in such a way that they are readily retrievable and protected against damage, deterioration or loss. Their retention times shall be established and recorded.</p> <p>Records shall be maintained, as appropriate to the system and to the organization, to demonstrate conformance to the requirements of this standard.</p>	
<b><i>Approach Taken at ASD</i></b>	<b><i>The Registrar's Observations</i></b>
<ul style="list-style-type: none"> <li>• Most new records are maintained electronically in the EMS Database. Some environmental records are maintained in paper form by the Manager, Environmental Protection.</li> <li>• Examples of all EMS-related records are kept in paper format in the EMS Records Manual.</li> </ul>	<ul style="list-style-type: none"> <li>• All records are electronic – data is backed up daily, but the EMS Records Manual referenced throughout has not been developed.</li> </ul>
<b><i>Cost</i></b>	
<ul style="list-style-type: none"> <li>• 1 person week, \$915</li> </ul> <p>See Appendix 1 for full breakdown of project costs.</p>	
<b><i>Recommendations</i></b>	
<ul style="list-style-type: none"> <li>• When planning an EMS, it helps to identify the need for different records at an early stage.</li> </ul>	

### 8.3.1 BACKGROUND

Environmental records at ASD were not well-maintained prior to EMS development. Information was not organized or kept up-to-date and there was no document control or records directory. Very few formal environmental records were kept. Some information maintained as environmental records included:

- environmental legal requirements information;
- training records (TDG and WHMIS);
- Material Safety Data Sheets; and
- past audit results.

### **8.3.2 IMPLEMENTATION**

With the development of an ISO 14001 EMS comes the requirement of creating and maintaining the appropriate records. Most new records developed for the EMS are maintained electronically in the EMS Database. Some environmental records are maintained in paper form by the Manager, Environmental Protection. Examples of all EMS-related records are kept in paper format in the EMS Records Manual.

### **8.3.3 REQUIRED RESOURCES**

Time was required to locate old records, develop new records, and educate personnel in using the records. The maintenance of all EMS records cannot be effectively judged until a few years and EMS 'cycles' have passed.

### **8.3.4 DOCUMENTATION REQUIREMENTS**

All EMS records must be maintained in accordance with the ISO 14001 standard requirements. EMS records are maintained electronically in the EMS Database and, in some instances, in paper form by the Manager, Environmental Protection. Examples of all EMS-related records are kept in paper format in the EMS Records Manual.

### **8.3.5 IMPLEMENTATION CHALLENGES AND SUCCESSES**

When planning an EMS, it helps to identify the need for different records at a very early stage. At ASD, new ones 'popped up' as the EMS developed, which necessitated some hurried record development and implementation.

An effective records system greatly eases monitoring and auditing the EMS.

## 8.4 ENVIRONMENTAL MANAGEMENT SYSTEM AUDIT

**TABLE 20: OVERVIEW OF THE ENVIRONMENTAL MANAGEMENT SYSTEM AUDIT**

<b><i>What the Standard Requires</i></b>	
<p>The organization shall establish and maintain (a) programme(s) and procedures for periodic environmental management system audits to be carried out, in order to:</p> <ul style="list-style-type: none"> <li>determine whether or not the environmental management system conforms to planned arrangements for environmental management including the requirements of this standard, and has been properly implemented and maintained; and</li> <li>provide information on the results of audits to management.</li> </ul> <p>The organization's audit program, including any schedule, shall be based on the environmental importance of the activity concerned and the results of previous audits. In order to be comprehensive, the audit procedures shall cover the audit scope, frequency and methodologies, as well as the responsibilities and requirements for conducting audits and reporting results.</p>	
<b><i>Approach Taken at ASD</i></b>	<b><i>The Registrar's Observations</i></b>
<ul style="list-style-type: none"> <li>The EMS Manager attended ISO 14001 Lead Auditor Training, collected information on internal EMS audits, and developed an internal EMS audit protocol/checklist.</li> <li>An internal EMS audit was completed over a two-day period.</li> <li>A one-day Documentation and Readiness Review audit was performed by a team of external auditors from KPMG and IMS.</li> </ul>	<ul style="list-style-type: none"> <li>Procedure conforms to the standard. Audit has been carried out. Corrective actions have been documented and the audit results have been presented to senior management.</li> <li>Audit schedule should be developed.</li> </ul>
<b><i>Cost</i></b>	
<ul style="list-style-type: none"> <li>5 person weeks, \$3,795</li> <li>Consulting and Training \$2,000</li> <li>Pre-Registration Audit \$4,500</li> </ul> <p>See Appendix 1 for full breakdown of project costs.</p>	
<b><i>Recommendations</i></b>	
<ul style="list-style-type: none"> <li>At least one member of internal audit team should receive Lead Auditor Training.</li> </ul>	

### 8.4.1 BACKGROUND

As there was no EMS in place prior to the pilot project, there was no EMS auditing done at ASD.

### 8.4.2 IMPLEMENTATION

The EMS Manager attended ISO 14001 Lead Auditor Training, collected information on internal EMS audits, and developed an internal EMS audit protocol/checklist. An internal EMS audit was completed over a two-day period. The audit team consisted of the EMS Manager, EMS Assistant, and Manager, Environmental Protection. The internal EMS audit was conducted in accordance with the ISO standards 14010, 14011 and 14012. Each step of the audit process was documented and can be found in the ASD Internal EMS Audit Report.

A one day audit designed to provide ASD with a Readiness Assessment of its EMS was also conducted. This Documentation and Readiness Review audit was performed by a team of external auditors from KPMG and IMS. Non-conformances were identified and reported to the appropriate ASD personnel. Corrective actions are presently being taken to help close the gap between the ASD EMS and the ISO 14001 standard.

#### **8.4.3 REQUIRED RESOURCES**

- Time and money spent for the EMS Manager to go on Lead Auditor Training. (1 week/\$2,000).
- Time was required to: develop an internal EMS audit protocol; prepare the facility for the internal audit and readiness review assessment; conduct the audit; write the audit plan and report; and communicate results to appropriate personnel.
- The Documentation and Readiness Review audit performed by a team of external auditors from KPMG and IMS cost \$4500.

#### **8.4.4 DOCUMENTATION REQUIREMENTS**

The internal EMS audit was conducted and documented as per ISO 14011 requirements. Documents produced include: ASD EMS Internal Audit Plan, ASD EMS Internal Audit Checklist, ASD EMS Internal Audit Report and Nonconformance Reports.

The Readiness Assessment findings are summarized by KPMG in the Documentation Review and Readiness Assessment Summary of Findings.

#### **8.4.5 IMPLEMENTATION CHALLENGES AND SUCCESSES**

The EMS Manager found the Lead Auditor Training to be quite helpful.

Originally, an internal audit of the entire ASD EMS was to be conducted. However, when EMS Awareness Training Sessions were delayed and scheduling difficulties arose, the full audit was scaled down to an EMS Documentation Review Audit. The ASD Quality Assurance division had agreed to lend some of their personnel for the internal EMS audit. This would have provided us with individuals with auditing experience and with a subjective mind towards the EMS. Unfortunately, we could not justify using these people once the audit was scaled down to just a Document Review.

The findings of the internal EMS audit correspond with the later findings of the KPMG Readiness Review Assessment.

## 9.0 APPLYING PRINCIPLE FIVE: MANAGEMENT REVIEW

### 9.1 MANAGEMENT REVIEW

**TABLE 21: OVERVIEW OF THE MANAGEMENT REVIEW**

<b><i>What the Standard Requires</i></b>	
<p>The organization's top management shall, at intervals that it determines, review the environmental management system, to ensure its continuing suitability, adequacy and effectiveness. The management review process shall ensure that the necessary information is collected to allow management to carry out this evaluation. This review shall be documented.</p> <p>The management review shall address the possible need for changes to the policy, objectives and other elements of the environmental management system, in the light of environmental management system audit results, changing circumstances and the commitment to continual improvement.</p>	
<b><i>Approach Taken at ASD</i></b>	<b><i>The Registrar's Observations</i></b>
<ul style="list-style-type: none"> <li>• The Facilities, Environment and Site Safety Division (FESSD) collects together information needed for the review, develops an ASD Management Executive EMS Review report, and delivers that report to the Management Executive.</li> <li>• Any findings or action items from the review are documented in the meeting minutes and maintained as EMS records, and reported back to the FESSD.</li> </ul>	<ul style="list-style-type: none"> <li>• Comprehensive agenda</li> <li>• ASD Management Executive EMS Review was available at the time of the audit and presented a good summary of the EMS status, however it did not present management's conclusions on the EMS suitability, adequacy and effectiveness. Additionally there was no evidence of some agenda items being covered e.g., relevance, adequacy, effectiveness of environmental policy; suitability sufficiency and effectiveness of the environmental objectives; the possibility of changing circumstances and the commitment to continual improvement.</li> <li>• There is an opportunity to include the results of compliance audits within the agenda items (as no comprehensive compliance audit has been conducted to date).</li> </ul>
<b><i>Cost</i></b>	
<ul style="list-style-type: none"> <li>• 2 person weeks, \$1,830</li> </ul> <p>See Appendix 1 for full breakdown of project costs.</p>	
<b><i>Recommendations</i></b>	
<ul style="list-style-type: none"> <li>• Management Reviews should not to be held close to the busy fiscal year end period as scheduling becomes problematic.</li> </ul>	

### **9.1.1 BACKGROUND**

As there was no EMS in place prior to the pilot project, there had never been an EMS Management Review.

### **9.1.2 IMPLEMENTATION**

ASD EMS Documentation refers to this element as the ASD Management Executive EMS Review. These reviews are to be conducted once a year. The Facilities, Environment and Site Safety Division (FESSD) collects together information needed for the review, develops a report, and delivers that report to the Management Executive. Any findings or action items from the review are documented in the meeting minutes and maintained as EMS records, and reported back to the FESSD.

To provide the Management Executive with the necessary information for this year's review, a ASD Management Executive EMS Review report was prepared by the EMS Manager. The EMS Manager then walked the members of the executive through the document, answering questions and providing appropriate explanations. The review focused on the following areas of the ASD EMS: the status of the ASD environmental policy; EMS Awareness Training; Legal Requirements (Identification and Compliance); Environmental objectives, targets, and programs (status of each); and internal EMS audit results. The responsibilities of the Management Executive in regards to the ASD EMS were also reviewed.

The Review was very effective. Each member of the executive participated in some manner. Interest was expressed regarding the development of the system, and the various reporting requirements. No resources were requested of the executive at this meeting.

### **9.1.3 REQUIRED RESOURCES**

Time was required to: discuss the Review with members of the FESSD; develop the report; agree on content; and arrange the meeting with executive. The time of the Management Executive is difficult to get - a half hour of their weekly meeting was provided for the Review.

### **9.1.4 DOCUMENTATION REQUIREMENTS**

The information presented to the Management Executive was documented in the ASD Management Executive EMS Review document and distributed to each member of the Management Executive. Minutes of the Review were taken and recorded as EMS records.

### **9.1.5 IMPLEMENTATION CHALLENGES AND SUCCESSES**

It was difficult to collect the members of the Management Executive together for the meeting. They appreciated the importance of this process, but were very busy at that time of year (fiscal year end) and schedules did not easily allow for a meeting. Future Management Reviews will not be held close to fiscal year end, but perhaps in early summer.

By tabling the Review document and walking through its contents, each participant was left with a clear understanding of what was going on with environmental matters at the facility.

Proper minutes were not taken at the time of this year's meeting, however, action items discussed must be documented and filed.