



TRANSPORT CANADA NASA SPACE SHUTTLE EMERGENCY LANDING SITE CONTINGENCY PLAN



Previous Edition: May 1997

Printed in Canada

Acknowledgements: This plan has been developed in coordination with National Aeronautics and Space Administration (NASA), other government departments, agencies and designated emergency landing site aerodrome operators.

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TP 12952E
(03/2006)

TC-1001880

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Foreword

This contingency plan is effective upon receipt and supersedes TP 12952E, dated May 1997. The plan is to be used by Transport Canada staff when monitoring the *National Aeronautics and Space Administration* (NASA) Space Shuttle launches and provides procedures where the NASA Space Shuttle may be required to complete an emergency landing or a crew bailout within the confines of Canadian territory or international waters bordering Canadian Territory. The contingency plan has been coordinated within Transport Canada, other government departments, agencies and designated emergency landing site aerodrome operators.

Original signed by

Merlin Preuss
Director General
Civil Aviation

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Abbreviations

ACC	Area Control Centre
CACO	Civil Aviation Contingency Operations
CFB	Canadian Forces Base
DND	Department of National Defence
ECC	Emergency Coordination Centre
JRCC	Joint Rescue Coordination Centre
NASA	National Aeronautics and Space Administration
NOTAM	Notice to Airmen
PSEPC	Public Safety and Emergency Preparedness Canada
RTCSC	Regional Transport Canada Situation Centre
TC	Transport Canada
TCSC	Transport Canada Situation Centre

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PLAN OF OPERATIONS

1. SITUATION

As a result of a request from the United States of America, Canada has agreed to designate certain Canadian airfields as emergency landing sites for the Space Shuttle (*Annex A – Agreement on Space Shuttle Emergency Landing Sites in Canada*). Transport Canada having authority over aviation matters developed the NASA Space Shuttle Emergency Landing Site Contingency Plan, which outlines procedures the department will take when monitoring NASA Space Shuttle launches at inclinations which navigate the eastern seaboard of Canada. If necessary, the department is prepared to initiate coordinated contingency plans to respond to a declared emergency involving the NASA Space Shuttle. Transport Canada (TC) will initially act as Lead Department and coordinate with other Federal Departments, agencies and authorities shown in Annex C as required until such a time as Public Safety and Emergency Preparedness Canada (PSEPC) assumes authority over the recovery operations.

2. MISSION

The purpose of this plan is to outline procedures that will enable a Canadian response in a coordinated and effective manner should the NASA Space Shuttle Commander declare an emergency and attempt either an emergency landing at one of the designated Canadian aerodromes shown in Annex D, or a crew bailout from the Shuttle while in Canadian airspace or international waters bordering Canadian Territory.

3. EXECUTION

3.1 Concept of Operations

3.1.1 Objective

The primary objective of this plan is to protect human lives by providing continuous monitoring of launches at inclinations which navigate the eastern seaboard of Canada and to establish emergency procedures necessary to respond to a declared emergency.

3.1.2 Available Resources

Civil Aviation Contingency Operations (CACO), Transport Canada Situation Centre (TCSC), Regional Transport Canada Situation Centre (RTCSC), NAV CANADA Gander and Moncton Area Control Centres (ACCs), NAV CANADA NOTAM Office, NAV CANADA National Operations Centre, Department of National Defence (DND) Joint Rescue Coordination Centre (JRCC) Halifax and designated aerodrome site resources are available as necessary.

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3.1.3 Command and Control

CACO will coordinate and support the efforts of all Federal Departments, agencies and authorities involved to ensure an effective response to the situation until another department or agency is given the Lead authority for recovery operations.

3.2 Phases

The response to a potential or actual NASA Shuttle Emergency landing will be handled in four phases: preparatory, monitoring, emergency response, and recovery operations.

3.2.1 Phase 1 - Preparatory

Phase 1 includes a notification procedure for providing prior notice of scheduled launches of the NASA Space Shuttle at inclinations which navigate the eastern seaboard of Canada and the initial development of regional and site specific contingency plans.

3.2.2 Phase 2 - Monitoring

Phase 2 involves the live monitoring of NASA Space Shuttle launches at inclinations which may impact Canada, by all involved Departments, Agencies and Authorities.

3.2.3 Phase 3 - Emergency Response

Phase 3 involves the implementation of emergency plans to respond to a declared emergency by the NASA Space Shuttle Commander or NASA authorities.

3.2.4 Phase 4 - Recovery Operations

Phase 4 involves the implementation of contingency plans to permit the recovery of a NASA Space Shuttle after an emergency landing at a designated aerodrome.

3.3 Tasks

3.3.1 Phase 1- Preparatory

3.3.1.1 CACO will issue a schedule of launches in conjunction with the NASA Johnson Space Centre and confirm flight schedules, two weeks prior to an actual launch, with the affected Area Control Centres (ACCs), designated aerodrome operators, Joint Rescue Coordination Centre (JRCC) Halifax, NAV CANADA National Operations Centre, other government departments and agencies.

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3.3.1.2 The Department of National Defence (DND) will ensure that plans are prepared to monitor launches and that the Wing Commander 5 Wing Goose Bay develops and maintains contingency plans to respond to an emergency landing of the NASA Space Shuttle.

3.3.1.3 The Commanding Officer of the JRCC Halifax will ensure that plans are in place to monitor launches and if necessary conduct search and rescue activities in accordance with the *Multilateral Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space* shown in Annex B.

3.3.2 Phase 2 - Monitoring

3.3.2.1 CACO will begin its monitoring two hours prior to the scheduled launch time of each NASA Space Shuttle launch. CACO will perform pre launch communications checks with involved government departments, designated aerodrome operators, agencies and authorities. CACO will determine emergency landing site suitability according to NASA's predetermined weather parameters for Shuttle emergency landing. Aerodromes not meeting the emergency landing criteria will be advised by CACO. CACO will establish a communications network between designated Canadian government departments, Moncton and Gander Area Control Centres, JRCC Halifax, and airport operations personnel at designated emergency landing aerodromes 20 minutes prior to the launch time. CACO will then conference its established communications network to the "Live" Johnson Space Centre launch communications network fifteen minutes prior to launch time. A Real time launch and ascent status from final countdown through ascent to orbit (or emergency landing if required) will be provided by the Johnson Space Centre. Air Traffic Control Towers and Flight Service Stations personnel at designated airports will be notified of the launch time by NAV CANADA ACC Shift Managers but not linked into the communications network. In the event of an emergency landing they will be advised by their designated ACC Shift Manager.

3.3.2.2 Live launch monitoring will be maintained by all parties CACO has established on its communications network until such time as the Launch Safety Officer at the Johnson Space Centre advises that the Shuttle has passed the window of opportunity to abort to each designated aerodrome.

3.3.2.3 Emergency Response Services at designated aerodromes that were not part of the CACO communications network will be released from active standby status when advised by their airport operations personnel (who were on the communications network) that the Shuttle has reached a safe orbit.

3.3.2.4 In the event of a declared emergency, phase 3 will be invoked.

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3.3.3 Phase 3 - Emergency Response

3.3.3.1 In the event of a declared emergency by the crew of the Shuttle or NASA authorities, all affected government departments, agencies and the designated aerodrome operator shall implement their contingency plans.

3.3.3.2 CACO will activate the Transport Canada Situation Centre (TCSC). The TCSC will establish communications directly with the designated aerodrome Emergency Coordination Centre (ECC) and Atlantic RTCSC as required.

3.3.3.3 The appropriate ACC will establish a corridor to permit the NASA Shuttle an unobstructed approach to the designated aerodrome as time and traffic permits. The ACC will communicate with the designated aerodrome controlling agency (Tower or FSS) to verify the appropriate runway is clear and made available.

3.3.3.4 Aerodrome managers will implement their emergency response plans. It is critical that responding emergency personnel be aware of the potential chemical hazards associated with the NASA Space Shuttle. More information on specific substances is available through CANUTEC at (613) 996-6666.

3.3.3.5 Site emergency response personnel will be responsible for maintaining a 400-metre (1275 feet) minimum security perimeter and ensure that no personnel enter this perimeter until approved by the NASA Space Shuttle Flight Crew or until the arrival of the NASA Augmentation Team.

3.3.3.6 In the event of a nominal landing, the NASA Space Shuttle Crew will be responsible for vehicle safing, vehicle reconfiguration, vehicle systems activation/deactivation and hatch opening and egress.

3.3.3.7 If the NASA Space Shuttle does not land at one of the designated aerodromes, DND will implement search and rescue operations from the JRCC Halifax in accordance with the *Multilateral Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space* and Department of National Defence Standard Operating Procedures.

3.3.4 Phase 4 - Recovery Operations

3.3.4.1 Recovery operations will commence at the stand down of a declared emergency and may take up to 40 days to complete.

3.3.4.2 Site emergency response personnel will maintain the 400-metre (1275 feet) minimum security perimeter until the arrival of the NASA Augmentation Team.

3.3.4.3 The NASA Team will be deployed from Kennedy Space Centre, Florida, within eight hours of an emergency landing.

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3.3.4.4 Upon arrival the NASA Augmentation Team will be responsible to:

- (i) assess the safety configuration of the NASA Space Shuttle;
- (ii) coordinate towing the NASA Space Shuttle from the runway to a suitable location;
- (iii) evacuate the flight crew to Johnson Space Centre, Houston, Texas;
- (iv) remove any necessary articles from the NASA Space Shuttle;
- (v) coordinate recovery efforts with the designated aerodrome officials; and
- (vi) prepare for the arrival of the NASA Assessment and Recovery Teams.

3.3.4.5 The NASA Rapid Response Team/Mishap Investigation Team will arrive at the designated aerodrome within 24 hours of an emergency landing.

3.3.4.6 The NASA Rapid Response Team/Mishap Investigation Team will be responsible for:

- (i) conducting an engineering assessment of the NASA Space Shuttle;
- (ii) the provision of a Security Team (to be coordinated with site management and the police force having jurisdiction at the designated aerodrome);
- (iii) the provision of a Safety Team; and
- (iv) conducting NASA recovery operations management in coordination with the Airport Manager of the designated aerodrome.

3.3.4.7 CACO staff will coordinate with NASA, the RTCSC and the Airport Manager of the designated aerodrome to facilitate the arrival and logistic requirements of approximately nineteen aircraft sorties (thirteen C-5A Galaxies and six C-141 Starlifters) and 400 personnel arriving on a staggered schedule.

4. COMMUNICATIONS

Attached in Annex E, is a communications plan that will be jointly confirmed or amended as necessary, as soon as possible after the start of Phase 3.

5. PLAN RESPONSIBILITY

CACO is responsible for the update and maintenance of this plan.

6. PLAN UPDATE

The plan will be reviewed yearly and updated as required.

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ANNEX A - Agreement on Space Shuttle Emergency Landing Sites in Canada

Note No. 44

The Embassy of the United States of America presents its compliments to the Department of Foreign Affairs and International Trade and has the honour to refer to the following treaties, to which both Canada and the United States of America are parties: the *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies* (1967), the *Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space* (1968) and the *Convention on International Liability for Damage Caused by Space Objects* (1972). The Embassy requests the permission and cooperation of the Government of Canada in the arranging for the inclusion of four Canadian airfields as potential emergency landing sites for certain space shuttle flights by the National Aeronautics and Space Administration (NASA).

The requested airfields are:

Halifax/Shearwater, Nova Scotia
St. John's, Newfoundland
Stephenville, Newfoundland
Gander, Newfoundland

An attempted emergency landing by a space shuttle at a site outside of the continental United States, while extremely unlikely, could occur at any time during a flight, and various sites around the world have been designated emergency landing sites through a variety of arrangements between the United States and host governments. A new requirement for sites in Canada results from an agreement between the governments of the United States and Russia which involves space shuttle flights to the Mir space station, and also from the decision for Russia to join the International Space Station program, in which Canada also participates. This recently concluded agreement for United States - Russian cooperation requires shuttle flight trajectories at an inclination of 51.6 degrees. The first launch requiring the possible use of Canadian airfields is STS-76 scheduled for launch on March 21, 1996. Other launches at 51.6 degrees will continue in the foreseeable future. In addition, Space Shuttle mission STS-85, scheduled for launch in 1997 will be launched at 57.0 degrees, and the Canadian airfields are also requested to support this launch. In the event of multiple engine failures during ascent on these two trajectories, one of these Canadian airfields could provide an alternative for a safe landing by the shuttle and its crew.

Designating the Canadian airfields as emergency landing sites would not require modifying the airfields, and would not require stationing United States personnel or equipment in Canada. In the event of a Shuttle emergency, upon notification by NASA, airport authorities would need to

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be able quickly to clear the runway and the surrounding airspace. After an emergency landing, the Shuttle would require certain post-landing services, including possible medical assistance to the crew, security for the shuttle, and clearance for the immediate arrival of a U.S. team to organize the return of the shuttle to the United States.

The Government of the United States will assume responsibility for compensation of all damages to person or property caused by such activities, and reimburse the Government of Canada for claims brought against the Government of Canada for such damages or losses, in accordance with the *Convention on International Liability for Damage Caused by Space Objects*.

The Government of the United States of America request the agreement of the Government of Canada to formally designate the four airfields named above as emergency landing sites for the Shuttle. Although it is extremely unlikely that the shuttle would ever have to make an emergency landing in Canada, an agreement would ensure that such an event would be handled with the fullest possible cooperation and hence as safely as possible.

The Embassy point of contact is: Harold Foster, First Secretary, Economic Section, tel. 238-4470, extension 215, fax: 234-2588.

The Embassy renews to the Department of Foreign Affairs and International Trade the assurances of its highest consideration.

Embassy of the United States of America

Dated Ottawa, February 21, 1996

Response by the Canadian Department of Foreign Affairs and International Trade to the Embassy of the United States of America.

The Department presents its compliments to the Embassy of the United States of America and has the honour to refer to the Embassy's Note No.44 of February 21, 1996, proposing that Canada agree to designate certain airfields as emergency landing sites for the Space Shuttle, and to the Departments reply TIR-0079 of March 20, 1996, indicating Canada's desire that Canada and the United States of America develop an agreement to permit and govern a possible emergency landing.

After over two years of discussions and negotiations, the Department has come to the conclusion, and believes you agree, that it is not possible to conclude an independent agreement on this subject at this time.

Notwithstanding the absence of such agreement, Canada will continue to provide designated aerodromes as emergency landing sites for the Space Shuttle in conformity with Canadian laws, policies and practices and the treaties referred to below. In order to facilitate the operational

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aspects of possible emergency landings, the Department expects that the National Aeronautics and Space Administration (NASA) and Transport Canada will develop a memorandum of understanding on operational procedures relating to an emergency landing of the Space Shuttle in Canada.

For all other issues, Canada will rely on existing, legally binding multilateral instruments that both Canada and the United States of America are part to, including but not limited to, the *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies* of January 27, 1967, the *Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space* of April 22, 1968 and the *Convention on International Liability for Damage Caused by Space Objects* of March 29, 1972, as well as generally accepted principles of international law.

The Department of Foreign Affairs and International Trade avails itself of this opportunity to renew to the Embassy of the United States, the assurances of its highest consideration.

Dated: Ottawa, May 13, 1998

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**ANNEX B - Agreement on the Rescue of Astronauts, the Return of Astronauts
and the Return of Objects Launched into Outer Space**

The Contracting Parties,

Noting the great importance of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, which calls for the rendering of all possible assistance to astronauts in the event of accident, distress or emergency landing, the prompt and safe return of astronauts, and the return of objects launched into outer space,

Desiring to develop and give further concrete expression to these duties,

Wishing to promote international co-operation in the peaceful exploration and use of outer space,

Prompted by sentiments of humanity,

Have agreed on the following:

Article 1

Each Contracting Party which receives information or discovers that the personnel of a spacecraft have suffered accident or are experiencing conditions of distress or have made an emergency or unintended landing in territory under its jurisdiction or on the high seas or in any other place not under the jurisdiction of any State shall immediately:

- (a) notify the launching authority or, if it cannot identify and immediately communicate with the launching authority, immediately make a public announcement by all appropriate means of communication at its disposal;
- (b) notify the Secretary-General of the United Nations, who should disseminate the information without delay by all appropriate means of communication at his disposal.

Article 2

If, owing to accident, distress, emergency or unintended landing, the personnel of a spacecraft land in territory under the jurisdiction of a Contracting Party, it shall immediately take all possible steps to rescue them and render them all necessary assistance. It shall inform the launching authority and also the Secretary-General of the United Nations of the steps it is taking and of their progress. If assistance by the launching authority would help to effect a prompt rescue or would contribute substantially to the effectiveness of search and rescue operations, the launching authority shall co-operate with the Contracting Party with a view to the effective conduct of search and rescue operations. Such operations shall be subject to the direction and control of the Contracting Party, which shall act in close and continuing consultation with the launching authority.

Article 3

If information is received or it is discovered that the personnel of a spacecraft have alighted on the high seas or in any other place not under the jurisdiction of any State, those Contracting Parties which are in a position to do so shall, if necessary, extend assistance in search and rescue operations for such personnel to assure their speedy rescue. They shall inform the launching

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authority and the Secretary-General of the United Nations of the steps they are taking and of their progress.

Article 4

If, owing to accident, distress, emergency or unintended landing, the personnel of a spacecraft land in territory under the jurisdiction of a Contracting Party or have been found on the high seas or in any other place not under the jurisdiction of any State, they shall be safely and promptly returned to representatives of the launching authority.

Article 5

1. Each Contracting Party which receives information or discovers that a space object or its component parts has returned to Earth in territory under its jurisdiction or on the high seas or in any other place not under the jurisdiction of any State, shall notify the launching authority and the Secretary- General of the United Nations.
2. Each Contracting Party having jurisdiction over the territory on which a space object or its component parts has been discovered shall, upon the request of the launching authority and with assistance from that authority if requested, take such steps as it finds practicable to recover the object or component parts.
3. Upon request of the launching authority, objects launched into outer space or their component parts found beyond the territorial limits of the launching authority shall be returned to or held at the disposal of representatives of the launching authority, which shall, upon request, furnish identifying data prior to their return.
4. Notwithstanding paragraphs 2 and 3 of this article, a Contracting Party which has reason to believe that a space object or its component parts discovered in territory under its jurisdiction, or recovered by it elsewhere, is of a hazardous or deleterious nature may so notify the launching authority, which shall immediately take effective steps, under the direction and control of the said Contracting Party, to eliminate possible danger of harm.
5. Expenses incurred in fulfilling obligations to recover and return a space object or its component parts under paragraphs 2 and 3 of this article shall be borne by the launching authority.

Article 6

For the purposes of this Agreement, the term "launching authority" shall refer to the State responsible for launching, or, where an international intergovernmental organization is responsible for launching, that organization, provided that organization declares its acceptance of the rights and obligations provided for in this Agreement and a majority of the States members of that organization are Contracting Parties to this Agreement and to the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies.

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Article 7

1. This Agreement shall be open to all States for signature. Any State which does not sign this Agreement before its entry into force in accordance with paragraph 3 of this article may accede to it at any time.
2. This Agreement shall be subject to ratification by signatory States. Instruments of ratification and instruments of accession shall be deposited with the Governments of the United Kingdom of Great Britain and Northern Ireland, the Union of Soviet Socialist Republics and the United States of America, which are hereby designated the Depositary Governments.
3. This Agreement shall enter into force upon the deposit of instruments of ratification by five Governments including the Governments designated as Depositary Governments under this Agreement.
4. For States whose instruments of ratification or accession are deposited subsequent to the entry into force of this Agreement, it shall enter into force on the date of the deposit of their instruments of ratification or accession.
5. The Depositary Governments shall promptly inform all signatory and acceding States of the date of each signature, the date of deposit of each instrument of ratification of and accession to this Agreement, the date of its entry into force and other notices.
6. This Agreement shall be registered by the Depositary Governments pursuant to Article 102 of the Charter of the United Nations.

Article 8

Any State Party to the Agreement may propose amendments to this Agreement. Amendments shall enter into force for each State Party to the Agreement accepting the amendments upon their acceptance by a majority of the States Parties to the Agreement and thereafter for each remaining State Party to the Agreement on the date of acceptance by it.

Article 9

Any State Party to the Agreement may give notice of its withdrawal from the Agreement one year after its entry into force by written notification to the Depositary Governments. Such withdrawal shall take effect one year from the date of receipt of this notification.

Article 10

This Agreement, of which the English, Russian, French, Spanish and Chinese texts are equally authentic, shall be deposited in the archives of the Depositary Governments. Duly certified copies of this Agreement shall be transmitted by the Depositary Governments to the Governments of the signatory and acceding States.

IN WITNESS WHEREOF the undersigned, duly authorized, have signed this Agreement.

DONE in triplicate, at the cities of London, Moscow and Washington, the twenty-second day of April, one thousand nine hundred and sixty-eight (1968).

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ANNEX C - Participating Departments, Agencies and Authorities

CANADA

Canadian Space Agency

5 Wing Goose Bay, Goose Bay, Newfoundland

Department of National Defence – CFB Halifax

Department of National Defence – Headquarters

Department of National Defence - Joint Rescue Coordination Centre – Halifax

Foreign Affairs Canada – Headquarters

Gander International Airport, Gander, Newfoundland

Halifax International Airport, Enfield, Nova Scotia

International Trade Canada – Headquarters

NAV CANADA

Public Safety and Emergency Preparedness Canada

St. John's Airport, St. John's, Newfoundland

Stephenville Airport, Stephenville, Newfoundland

Transport Canada

UNITED STATES OF AMERICA

Embassy of the United States of America - Ottawa

National Aeronautics and Space Administration

United States Department of State

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ANNEX D - Designated NASA Space Shuttle Emergency Landing Sites in Canada

This list has been updated following the *Agreement on Space Shuttle Emergency Landing Sites in Canada*(annex A) as requested by NASA and concurrence of the airport authorities below.

Gander International Airport, Gander, Newfoundland

Halifax International Airport, Enfield, Nova Scotia

St. John's Airport, St. John's, Newfoundland

Stephenville, Stephenville, Newfoundland

5 Wing Goose Bay, Goose Bay, Newfoundland

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ANNEX E - COMMUNICATIONS PLAN

Background

The intent of this communications plan is to address any communications needs that will arise following the need for an emergency landing of a space shuttle at one of five Canadian sites. In these situations, the Privy Council Office designates a lead department. Public Safety and Emergency Preparedness Canada will likely have the lead and based on past experience, other involved departments will include the following: National Defence, Transport Canada, Fisheries and Oceans, Foreign Affairs and Canadian Space Agency.

Target Audience

Primary

- general public from affected area
- news media, especially regional
- Parliamentarians
- Provincial/territorial governments

Secondary

- general public
- national/international news media
- other government departments

Key Messages

Transport Canada monitors the shuttle until it passes the short window of exposure. We are working closely with several government departments to address the situation. We will keep Canadians informed as all relevant information becomes available.

Strategic Considerations

Public Safety and Emergency Preparedness Canada will likely have the lead, unless the Privy Council Office names another department as the lead. That said, the appropriate government department answers media questions regarding departmental roles.

Tools and Activities

The lead department will coordinate communications tools and/or activities with input from participating departments. Activities could include news conferences and technical briefings while tools could include news releases, media lines, questions and answers, backgrounders, and speaking points. Close coordination between the lead department and other government departments will be required to ensure consistency of messaging.

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Federal-Provincial-Territorial Relations

Regional Emergency Preparedness Canada officials will coordinate communications with the affected provincial/territorial governments.

Budget

As Transport Canada has a supporting function during this type of event, only minimal human resources costs should be required.

Evaluation

The lead department will conduct an evaluation of the entire response, including communications activities with all participating departments, including Transport Canada.

Dated: November 15, 2005

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ANNEX F - LIST OF REFERENCES

Agreement Among the Government of the United States of America, Governments of Member States of the European Space Agency, the Government of Japan, and the Government of Canada on Cooperation in the Detailed Design, Development, Operation, and Utilization of the Permanently Manned Civil Space Station.

Multilateral Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies.

Outer Space Convention on International Liability for Damage caused by Space Objects.