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NOTE

Zero in Change No. column of the list of effective pages indicates an ORIGINAL page.

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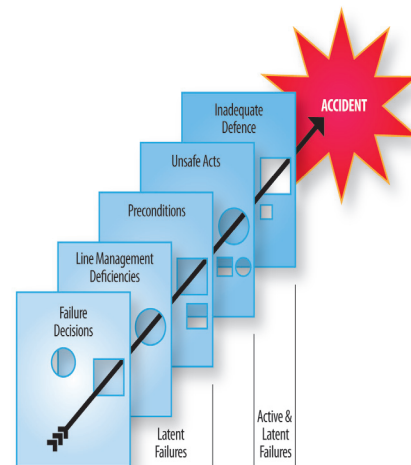
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Annex A
Chapter 1
A-GA-135-001/AA-001

ANNEX A – FS STRATEGIC BUSINESS MODEL

INTRODUCTION

1. The strategic FS model provides a high level framework and describes the processes involved in the flight safety program. Accident prevention processes can be derived by inverting Reason's Swiss Cheese model of Accident Causation. Accidents occur because weaknesses or "windows of opportunity" open and align in all levels of the operation, allowing a chain of events to cause an accident. Accidents can be prevented by adding layers of defences through resilience management and patching holes in these defences through risk/hazard management.



FS BUSINESS PROCESSES

2. Appendix 1 to this annex is a graphical depiction of the FS business processes. They are regrouped as follows:

- a. Resilience Management. Resilience management is the process of making the equipment, procedures and personnel resilient to accident-causing conditions, and thus protect operations from unknown hazards.
 - (1) Equipment Resilience Activities. CF airworthiness organizations employ tools and methods to ensure aircraft and related equipment are acceptable for the operations and flying environment. FS data is provided to improve Design, Modification, and Maintenance airworthiness on current and new aircraft so that the flying operations can better withstand unknown hazards.
 - (2) Procedures Resilience Activities. CF flying procedures are monitored to ensure that air operations are being conducted in a safe manner. FS surveys are conducted, rules and regulations are reviewed, and periodic inspections are performed in order to continually improve all associated procedures.
 - (3) Personnel Resilience Activities. Personnel are trained to be capable of dealing with known and unknown threats to flight safety. Occurrences, hazards, trends, and many other forms of flight safety data are disseminated to all personnel involved with the support or conduct of air operations so they can better understand the situations and circumstances that can compromise flight safety. This is supported by a comprehensive awards program to encourage safe behaviour throughout the organization.
- b. Program Management. The FS Program provides the administrative framework for the Resilience and Risk Management processes. Program Management includes development of the FS Program, policies and procedures, relevant training and education, and activities that provide feedback to the chain of command. Program Management does not directly prevent accidents, but supports Resilience and Risk Management in doing so.

- c. Risk Management. Risk management is the systematic process of identifying risks, assessing their implications, deciding on a course of action, and evaluating the results. Known risks are those that have been identified and analyzed. Unknown risks, by their nature, cannot be managed, and thus are addressed through resilience management.
 - (1) Identify Hazards. The principle means of identifying hazards is through occurrence investigation, hazard reporting, and trend analysis. A comprehensive reporting system is required to track hazards from initial identification until resolution of any preventive measures.
 - (2) Investigate Hazards. Based on the preliminary information captured when the hazard or occurrence was reported, the nature of the hazard and its severity will be used to determine the level of the investigation and resources that should be employed.
 - (3) Analyze Risk. All available information is systematically reviewed to determine how often specified events may occur and the magnitude of their consequences. Commanders at all levels review investigations within their sphere of responsibility, the associated proposed PM, then make documented decisions on how they will address the hazards.
 - (4) Mitigate Risk. Hazards, whenever possible, are corrected by implementing one or more FS PM. It is critical that the various stages and levels of implementation be tracked and monitored to ensure complete staffing, either full implementation, partial implementation or no implementation (refusal). The latter two options must be endorsed at the proper level in the chain of command and supported by an appropriate record of Airworthiness Risk Management.

FS INFORMATION FLOW

4. Appendix 2 describes the interrelationship between the individuals involved in FS and the FS information flow. It represents the major types of information used for flight safety management (Hazards, Risk, PM, etc.) and the relationships that the entities have with each other as the data / information flows through the FS system.

5. The information model descriptors are:

- a. Persons Involved in Air Operations. These personnel include aircrew, groundcrew, maintainers, air traffic personnel, contractors, as well as any other Air Force, Navy, or Army personnel involved with flying operations. They are responsible for identifying and reporting any hazard to flight safety that they find.
- b. FS Staff. FS Staff include Unit Flight Safety Officers (UFSOs), Wing Flight Safety Officers (WFSOs), Division Flight Safety Officers (Div FSOs), DFS Flight Safety Officers, and deputies at all levels. They are responsible for validating and investigating reported hazards, for analyzing the hazard risk potential and for proposing possible PM. FSOs and their assistants (FS Non-Commissioned Members, FSO Specialist (Weapons) (FSOS (W), etc.) operate within a FS functional chain of command. As advisors to their respective supervisors, all tiers of FS (deployments, unit, wing, air div, contracted unit and DFS) work in a cooperative and functional Chain of Command IAW direction set in

this publication.

- c. Chain of Command. Chain of command include unit commanding officers, wing commanders, division commander, and supervisors at all levels. These persons are responsible for evaluating the hazards within their organizations, and either formally accepting the risk, or mitigating the risk by implementing PM. By extension, the senior management of contracted organizations have an equivalent chain of command.
- d. Action Agencies. Once the Chain of Command has confirmed the risks associated with certain hazards, they will task Action Agencies to complete PM. These Action Agencies will notify FS Staff when their assigned PM have been completed, as well as provide status reports along the way.

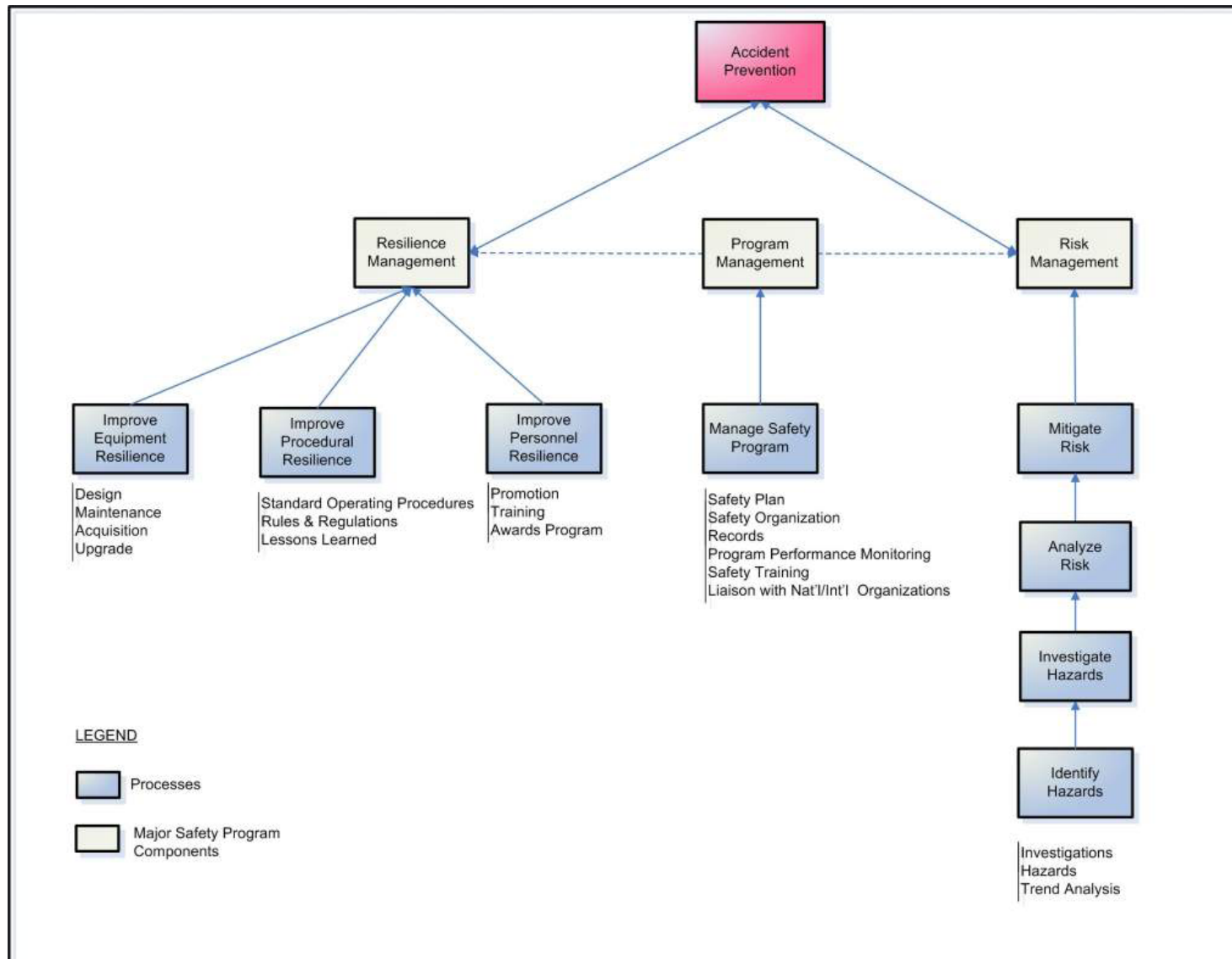
FS BUSINESS MODEL AND FSOMS

6. The FS Program achieves the aim of preventing accidental loss of aviation resources while accomplishing the mission at an acceptable level of risk. This is done by managing the risks associated with air operations, and by making the organization resilient to unknown hazards. Some of the FS processes in the FS business model are the direct responsibility of the Airworthiness Investigative Authority while others are the responsibility of organizations and personnel directly and indirectly supporting air operations.

7. The FS Occurrence Management System (FSOMS) supports the FS Program by recording all factual data related to FS occurrences and hazards. It details investigation results including assigned cause factors, recommended PM and disposition of these PM. The collection of data and its systematic analysis helps in the prevention of accidents and the control of risk in a manner that is measurable.

Appendix 1
Annex A
Chapter 1
A-GA-135-001/AA-001

APPENDIX 1 – FS BUSINESS PROCESSES



Annex A
Chapter 2
A-GA-135-001/AA-001

ANNEX A - AIR CADET FLYING PROGRAM

FS PROGRAM RESPONSIBILITY

1. The CF responsibility for the FS aspect of the Air Cadet Flying Program is derived from Section 43 of the *National Defence Act*. The CDS is tasked with operational command and control of the Air Cadet Flying Program, specifically all air cadet gliding and powered flight operations, including familiarization flying funded by DND / CF and the FS Program.

INVESTIGATION OF CADET OCCURENCES

2. The investigation of air cadet occurrences will be carried out on behalf of the AIA as outlined in the AIM and conducted as follows:
- a. Air Cadet Glider Program (ACGP). The ACGP is a national program consisting of familiarization flights and glider pilot flying training. All air cadet gliding resources are owned by the provincial committees of the Air Cadet League of Canada and are Transport Canada registered, but operational control rests with the CF. All serious occurrences with aircraft involved in the ACGP shall be investigated by DFS / AIA. Thus in accordance with section 18(1) of the *Canadian Transportation Accident Investigation and Safety Board Act* (CTAISB), the aircraft involved here are considered a “military conveyance”. The TSB must be notified by the quickest means possible following any significant occurrence, using the procedures prescribed in the *Canadian Air Regulations* (CARs) and the Working Agreement between DND and TSB; and
 - b. Air Cadet Powered Flight Program (ACPP). The ACPP is a national program consisting of familiarization training funded by the local Sponsoring Committee of the applicable air cadet squadron and a summer pilot ab-initio flight training funded by DND. The conduct of a cadet occurrence investigation is governed as follows:
 - (1) Familiarization Flights. The civilian registered aircraft used to conduct the winter familiarization flying program are not considered “military conveyance” aircraft given these flights are contracted by the Local Sponsoring Committee. Therefore, the FS investigations of any occurrence related to this part of the ACPP would be the responsibility of the TSB. DFS would be invited to participate in the investigation as per the Working Agreement between TSB and DND, and
 - (2) Ab-initio Flight Training. The civilian registered aircraft used to conduct ab-initio flight training as part of the Power Pilot Scholarship program are considered “military conveyance” aircraft. Therefore, any FS investigations are the responsibility of the CF as per the *CTAISB Act*. Notwithstanding, TSB would be invited to participate in the FS investigation as per the Working Agreement between TSB and DND.

DESIGNATED SUPPORT WINGS

3. In view of the structure of the Air Force, certain FSOs from designated wings will act as FS advisors to the Region Comds. This working relationship will apply only when these personnel are performing FS duties associated with Air Cadet flying program activities. The Region Comds and associated FSOs are listed in Table 2 below.

REGION	REGION COMD	DESIGNATED FSO
Atlantic	Comd MARLANT	14 Wing Greenwood
Eastern	Comd LFQA	3 Wing Bagotville
Central	Comd LFCA	8 Wing Trenton
Prairie	Comd 1 Cdn Air Div	17 Wing Winnipeg
Pacific	Comd MARPAC	19 Wing Comox

Table 2 – Regions and designated FSOs

4. The FSO from the designated support wing will act as the FS advisor for each respective regional site. The FS support to Air Cadet Glider program gliding sites will be promulgated on an annual basis by 1 Cdn Air Div before the start of the annual Air Cadet Glider program.

DUTIES AND RESPONSIBILITIES

DFS RESPONSIBILITIES

5. The DFS responsibilities for the national cadet program are as follows:
- advise on the implementation and monitor the effectiveness of the regional FS Program in cooperation with D Cdts and the Regional Cadet Air Operations Officer (RCA Ops O);
 - coordinate independent airworthiness investigations for aircraft occurrences and investigate as required;
 - provide annual FS briefings to summer gliding schools;
 - monitor incidents and the follow-up PM; and
 - monitor FS surveys from all gliding sites.

1 Cdn Air Div Responsibilities

6. 1 Cdn Air Div responsibilities for the national Air Cadet Glider program program are listed below:

- annually assign the FSO positions to meet designated regional gliding school and gliding familiarization site requirements; and
- provide advice and assistance to Comd 1 Cdn Air Div on Air Cadet Glider program FS matters.

Support Wing Responsibilities

7. The responsibilities of the WFSO and responsibilities for the national Air Cadet Glider program are to:

- provide FS assistance to Air Cadet Glider program activities at a designated site;

- b. advise the school / site comds on FS matters in cooperation with the Air Cadet Glider program FSO;
- c. monitor the safety aspects of flying operations in cooperation with the Air Cadet Glider program FSO;
- d. provide assistance in the preparation and timely submission of initial and supplementary occurrence reports, and recommend PM resulting from occurrences;
- e. conduct biennial FS surveys of all designated gliding sites in conjunction with RCA Ops O;
- f. provide assistance to DFS and RCA Ops O in the event of an accident;
- g. assist the Region Comd in preparing comments for FS investigation reports; and
- h. review Air Cadet Glider program occurrence reports for quality assurance.

FSO RESPONSIBILITIES

8. RCA Ops Os shall designate a Unit Flight Safety Officer (UFSO) for the Regional Gliding School and a Regional Flight Safety Officer (Reg FSO) for all the glider familiarization sites. The UFSO / Reg FSO must be familiar with the unit's/region's operations in order to provide sound advice on accident prevention and hazardous conditions. Also, at each gliding site, an FSO will be designated (Gliding Site FSO). In their proper chain of command, the FS staff responsibilities are as follows:

- a. advise the school / site comd on all aspects of FS;
- b. report all incidents and accidents in accordance with A-GA-135-001/AA-001;
- c. aid school / site comds in the implementation of the unit FS Program; and
- d. monitor all aspects of the operation and advise school / site comds of hazardous conditions.

DETECTION OF UNSAFE PROCEDURES

9. If, during the course of their duties, FS personnel detect any unsafe procedures / practices, they shall immediately notify the site comd, who will immediately rectify the situation and advise of corrective actions taken. The UFSO / Reg FSO will keep the WFSO / BFSO informed of important FS matters.

OCCURRENCE ACTION

10. In the event of an FS occurrence:

- a. the FS personel will file the initial occurrence report;
- b. the UFSO / Reg FSO is responsible through the RCA Ops O for investigating the incident and filing a supplementary report (SR) within 30 days. Distribution of the initial and the SR will be accomplished through the FSOMS as well as any other appropriate addressees;
- c. the support WFSO will maintain files of all the ACGP FS reports and monitor the reporting process;
- d. the support WFSO will assist the UFSO / Reg FSO with any investigations into air occurrences within their region of responsibility; and
- e. the FSO will advise the Region Comd on serious gliding occurrences as required.

ACCIDENT ACTION

11. In the event of an accident:
- a. the Gliding Site FSO and/or the Site Commander shall complete the necessary action requirements and initiate reporting in accordance with a detailed Site specific Emergency Response Check List approved by the RCA Ops O;

NOTE

This requirement will differ from site to site depending upon whether the field is DND or TC, controlled or uncontrolled, etc.

- b. the Gliding Site FSO and/or the Site Commander shall ensure that the UFSO/Reg FSO is contacted immediately. Then, the UFSO / Reg FSO shall ensure that the RCA Ops O and the appropriate WFSO / BFSO are contacted immediately. The RCA Ops O shall immediately advise D Cdts 4-6;
- c. the WFSO / RCA Ops O, on notification of an accident, will ensure that DFS (via toll free number 1-888 WARN DFS or 1- 888 927 6337), NDOC, and AOC have been notified and then will assist DFS in arranging the proper FS investigation. Personnel requirements for an investigation will be coordinated by DFS and NDHQ/D Cdts 4-6 (National Cadet Air Operations officer); and
- c. DFS will provide investigative assistance and advice as required.

REVIEW PROCESS

12. On completion of a FS investigation, a draft report for comment will be sent to persons of direct interest (PDI), CO RCSU (or equivalent), Region Comd and NDHQ VCDS/D Cadets. The action letter for PM implementation will be signed by the CAS as the AA.

CHAPTER 4 – PREVENTION ACTIVITIES

References: A. 1016-18 (DFS) 7 May 2007 - CVR/FDR Policy

B. 1 Cdn Air Div Orders, Vol 3, 3-304: Flight data recorder/Cockpit Voice Recorder/Crash Position Indicator/Other Cockpit Flight Recording Devices

C. EUROCAE document ED-112 Minimum Operational Performance Specification for Crash Protected Airborne Recorder Systems

GENERAL

1. Two of the major FS prevention activities are the Bird Strike Prevention Program and the FS survey. Effective Bird Strike Prevention Programs and FS surveys are key to maintaining a combat-capable and operationally effective force.

BIRD STRIKE PREVENTION PROGRAM

AIM OF PROGRAM

2. The aim of any Bird Strike Prevention Program is to minimize bird hazards to aircraft operating from DND airfields.

OBJECTIVES

3. The Bird Strike Prevention Program must have at least four objectives:

- a. management of the environment;
- b. dispersal of birds;
- c. education of aircrew; and
- d. reporting bird strikes and near misses.

4. Birds constitute a significant hazard to aircraft. The vast majority of bird strikes occur within five miles of an aerodrome. A comprehensive Bird Strike Prevention Program shall be implemented to reduce their impact.

5. The key element of a good Bird Strike Prevention Program is the establishment of an effective unit bird and animal control committee. Although bird and animal control is an ATC responsibility, FSOs must play an active role.

6. The Bird Strike Prevention Program strives to manage the environment around the airport. The objective of the plan is to make the airfield unattractive to birds. Studying the birds that inhabit the environment of the airport will suggest measures that can be taken to make the airport unattractive to them. Some measures are obvious such as draining wet areas and cutting down trees. Others, such as changing ground cover or using chemicals, are more complex. Each airport has its own study and improvement plan, which must conform to environmental constraints.

7. Successful measures to modify an airport habitat require the advice of an ornithologist. Almost

every DND airport has been surveyed. Reports are available through the FSO or DFS. If a new survey is required, the wing can request NDHQ / DGRPP (Director General Realty, Policy and Plans) to arrange a bird hazard survey in conjunction with the Canadian Wildlife Service (CWS).

BIRD STRIKE REPORTING

8. A link to detailed information on airfield environment management procedures can be found on the DFS websites. Further guidance is available in CFACM 2-813, *Air Traffic Control Manual of Operations – Aerodrome Bird and Animal Control*, and in *Sharing the Skies – An Aviation Industry Guide to the Management of Wildlife Hazards* (TP13549).

PREVENTION STRATEGY

INFORMATION ON BIRDS

9. Transport Canada has opened a bird hazard website to provide access to bird strike data and TC documents on wildlife control. The DFS website provides a link to this TC website.

REPORTING BIRD ACTIVITY

10. Pilots shall advise air traffic control and other aircraft of any significant bird activity.

11. Aircrew shall report to their FSO each time they experience a bird strike or near miss. Form CF 215 – FS Occurrence Information Sheet shall be used to assist in providing the required information. The FSO will ensure that the information collected, including category of damage, is entered in the FSOMS database. This will supply the information on bird habits necessary for preventing bird strikes.

IDENTIFICATION OF BIRD TYPE

12. Accurate identification of bird remains provides invaluable information for an effective Bird Strike Prevention Program. Local expertise (bird watcher groups, ornithologists, wildlife specialists) should be used whenever possible to identify bird remains. Annex A contains a list of regional offices of the CWS.

FS SURVEYS

PURPOSE

13. An FS survey measures the effectiveness of an FS program and assists in the identification of recommended PM. Comds have found that FS surveys identify deficiencies that would otherwise have gone undetected until revealed as the causes of occurrences.

REQUIREMENT

14. Surveys are an FS necessity at every level of operational command as well as at contractor facilities that support the maintenance and operation of CF aircraft.

FREQUENCY

15. FS surveys must be conducted on a regular basis if they are to be effective. The type of survey normally dictates how often they should be conducted.

TYPES

16. There are four types of FS surveys:

- a. a formal survey;
- b. an informal survey;
- c. an air weapons survey; and
- d. a contractor survey.

FORMAL SURVEY

17. A formal survey is usually conducted by specialists from a formation other than that which is being surveyed (e.g. 1 Cdn Air Div survey of a wing, base or unit). The comd of the formation to be surveyed is usually notified in advance and is always briefed on the results. The survey team must be cooperative, understanding and helpful. Comds can also request surveys whenever they want to have an outside view of their unit. Formal surveys of ATESS and AETE shall be conducted on behalf of the CAS by the 1 Cdn Air Div FSO, and the Divisional Staff will be responsible for follow-up action.

INFORMAL SURVEY

18. An FSO informal survey is normally carried out as a minimum once a year by the FSO as part of the FS Program. Inviting an FSO from outside the unit to conduct the survey provides a fresh view and an invaluable exchange of ideas.

19. The FSO shall survey the units in their organization at least once every year; this includes contractor operated units / sections. Unit FS teams should survey their unit on a regular basis as part of their yearly program. Both the UFSO and FS NCM should visit each section regularly throughout the year. Further, whenever someone joins an FS team, be it at the wing or unit level, they should visit all sections within their purview within one month of assuming their duty.

AIR WEAPONS SURVEY

20. An internal air weapons safety survey shall be conducted in any unit involved in air weapons operations. The survey should be a coordinated effort involving both FS and AWS personnel. A combined FS/AWS Formal Survey should be conducted by 1 Cdn Air Div every 24 months.

CONTRACTOR SURVEY

21. DFS will conduct a contractor survey of all contractor facilities where DND owned or controlled aircraft are maintained. Annex C contains a sample contractor FS survey checklist. These surveys will be conducted every 18–24 months.

CONDUCT

22. Survey members may receive conflicting information. The survey team must attempt to balance these inputs and must rationalize these inputs with the “big picture”. There are three basic tenets to conducting an effective FS survey: listen effectively, observe objectively and share all observations in an open and honest manner. The biggest challenge to overcome is the fact that a survey is a snapshot in time and it is difficult to receive feedback and insights from everyone.

TEAM COMPOSITION

23. A survey team comes in many shapes and sizes, all based upon the scope of the survey. An informal unit survey by a WFSO may be comprised of a sister squadron FSOS, the host UFSO / FS NCM and the D/WFSO, whereas a formal survey by 1 Cdn Air Div FSO will have up to 12 members. A unit team that surveys its own operation would likely consist of the UFSO and FS NCM. Another perspective is to do a combined survey, perhaps with the general safety organization, and make up a joint team.

QUESTIONNAIRES

24. Questionnaires can be used effectively during surveys. One of the difficulties of taking a snapshot of a unit is the number of people one can meet. A simple questionnaire that can be distributed beforehand and collected during the survey provides the survey team a much broader reach. The questionnaire should be short, easy to complete, anonymous, and use questions that are objective in nature. It is important to collate the results quickly and ensure effective feedback is provided to both the chain of command and those who were surveyed.

FORMAL SURVEY REPORT

25. The formal survey report process will consist of three distinct phases:
- the first phase is that the survey team lead will provide a verbal debrief, at the end of the survey, to the host WComd / Sqn CO. The debrief should include all significant findings and observations as well as any analysis from items such as survey questionnaires;
 - the second phase is a written report to the WComd and other applicable comds. The report must identify recommendations and where possible, suggested action levels, e.g. CAS, 1 Cdn Air Div, and wing. The written report should be staffed and distributed within one month of the survey completion date; and
 - the third and final phase of the survey process is for the host wing / unit to provide written feedback on the status of final report recommendations. 1 Cdn Air Div FSO will track status / closure of formal FS report recommendations.
26. Surveys consist of two phases: the actual 3-part survey and the resulting implementation of recommendations. Annex B contains a sample FS survey checklist. Annex D contains a sample FS survey checklist for the Air Cadet Gliding Program.

ACTION ON CHANGE OF COMMAND

27. When there is a change of command, a survey of the unit shall be conducted as soon as practical to provide the CO with an updated FS health check of the unit.

FEEDBACK AND FOLLOW-UP

28. The survey process is conducted primarily to provide the chain of command with credible advice on how to better accomplish the mission. There are a variety of formats available to provide such advice, be it the informal verbal debrief or a more formal written report. Regardless of which method is utilized, it is essential to have a clear aim and a set structure that leads to a logical conclusion and recommendations. To ensure closure, it is important that realistic target dates be established for each recommendation; moreover, recommendations must be affordable, achievable and based on common sense. Recommendations without an assigned target date for closure can cause the survey to

become merely an event instead of a process, thereby greatly limiting any potential improvements or enhancements that could result from the operation. There are tremendous advantages to capturing the observations and recommendations in a written format. A written report, be it in point form or in full paragraph form, provides a clear delineation of the observations and recommendations.

CONDUCT OF FORMAL SURVEY

29. 1 Div FSO will conduct a formal survey of each wing once every 18–24 months. The FS survey checklist at Annex B will be used as a guideline for areas to be surveyed. A formal report will be released by the 1 Div FSO to the host WComd / Sqn CO within one month of the survey completion date; subsequently the Comd 1 Cdn Air Div and A-staff will be de-briefed on the survey findings and recommendations. The 1 Div FSO is responsible for tracking the status of all recommendations in the written report .

TEAM MEMBERS

30. The survey team for a formal survey will usually be composed of some 10 to 12 members as follows:

- a. Lead – The formal survey team will normally be led by the appropriate 1 Div FSO desk officer at 1 Cdn Air Div;
- b. appropriate desk officer from DFS;
- c. additional 1 Cdn Air Div FS team members as required;
- d. FSO from sister wing (e.g. survey of 4 Wg will have 3 Wg FSO on team);
- e. ATC rep;
- f. maintenance reps (including augmentation from A4 Maint and DFS); and
- g. other members as required.

TIMELINES

31. The following are the recommended timelines for a formal survey:

- a. initial staff check for timings with wing 4–6 months before survey;
- b. request for team member participation 2–4 months before;
- c. survey directive with questionnaire released by 1 Div FSO to WComd 1 month before;
- d. initial FS team brief by team lead 1–2 weeks before survey;
- e. final written report to Wcomd 1 month after survey completion; and
- f. response from applicable OPIs, based on survey recommendations, to 1 Cdn Air Div.

COCKPIT VOICE RECORDER (CVR) AND FLIGHT DATA RECORDER (FDR) PARAMETER REQUIREMENTS

32. The CVR/FDR policy (ref A) established the airworthiness requirements for CF operated aircraft to be equipped with on-board recording devices that are to be used for accident prevention and accident investigation. The policy originally signed off by the Chief of Air Staff (CAS) is set to transition to a DAOD to be published.

33. Ref C represents the minimum standards required for CVR and FDR. It does not address military role specific parameters to be recorded. It is considered the basis for new aircraft procurement; however, in-service fleets are expected to become fully compliant with the CVR/FDR equipment requirements. Given this objective will be achieved over the long-term, it is expected that fleet managers will seek alternate means of compliance and obtain from the AA the appropriate waivers.

34. Annex E to this chapter details a list of additional CVR/FDR parameters for given aircraft families.

CHAPTER 5 – PROMOTION

GENERAL

1. The objective of the FS Promotion Program is to facilitate the maintenance of a strong and committed FS culture within all organizations that conduct or support DND / CF flying operations. An active and visible FS Promotion Program designed to engender full participation in the FS Program at the tactical, operational and strategic levels is an excellent way to achieve the objectives of the FS Program with a relatively small investment.
2. The CF FS Program uses a series of briefings, FS documents and awards as the main mechanisms for the Promotion Program.

PROMOTIONAL BRIEFINGS

DFS ANNUAL BRIEFING

3. The DFS annual briefing is one of the main FS promotion activities. The objective of this briefing is to remind all personnel of the requirement for and the importance of the FS Program. In addition, this activity is used to update personnel on new FS concepts as well as to identify key lessons learned through the analysis of occurrences over the previous 12 to 18 months. The intent of the annual DFS presentation is to brief as many civilian and military personnel as possible at the tactical, operational and strategic level. Although the briefing will be focused on CF / DND formations, wings and units, the briefing will also be presented where possible to OUTCAN formations such as NATO AWACS and NORAD detachments.

FSO BRIEFINGS

4. FSOs are encouraged to provide / conduct briefings on subjects pertinent to their units.

BRIEFING CONTENT

5. Briefings must be relevant to the audience, informative, current and interesting.
6. Visual aids should be used to the extent possible. A presentation that contains photos, charts, graphs and statistics relevant to the verbal message can greatly assist in maintaining audience attention and communicating the message.

PROMOTIONAL MATERIAL

CF FS PUBLICATIONS

FLIGHT COMMENT MAGAZINE

7. *Flight Comment* is the FS magazine of the Canadian Forces and is produced three times a year. The objective of *Flight Comment* is to provide relevant, interesting and timely FS information to all personnel involved in air operations. The intent of the magazine is also to provide a forum for anyone to present written articles on any issue related to FS. Accordingly, any individual can submit an article or poster concept for publication in *Flight Comment*. DFS reserves the right to edit these articles for length and content.

ON TARGET MAGAZINE

8. *On Target* is a focus magazine similar to Flight Comment and is produced once per year or as required by the Directorate of Flight Safety. The objective of *On Target* is to educate Air Force operators on a single subject of interest in a user friendly yet thorough fashion. All back issues of *On Target* are archived on the DFS website.

DEBRIEFING PAMPHLET

9. The objective of the “Debriefing” pamphlet is to highlight significant FS concerns in a timely manner. “Debriefing” is a short, one-to-two page electronic pamphlet that is produced by DFS or 1 Div FSO in a bilingual, electronic format on a monthly basis. The content generally covers current trends, threats and occurrence information. All back issues of “Debriefing” are archived on the DFS website.

FLASH PAMPHLET

10. The objective of an FS FLASH is to highlight critical FS information to both the chain of command and the rest of the FS team as quickly as possible. An FS FLASH is released on the authority of DFS and is produced on an as-required basis. Typically, an FS FLASH will be produced as a result of issues identified during the investigation of a serious occurrence.

OTHER FS PERIODICALS

11. FS information is available from a myriad of FS magazines produced by national and foreign government departments as well as companies and safety organizations. These periodicals contain a wealth of relevant and interesting FS information that can be used to raise the level of FS consciousness. All members of the FS team are encouraged to regularly review these publications for items of interest. An updated list of appropriate periodicals can be found on the DFS website.

OTHER MEDIA

VIDEOS

12. FS videos can be obtained from a variety of sources. DFS maintains a library of FS videos that can be acquired through the DFS website.

POSTERS

13. DFS also maintains a library of FS posters that can be obtained through the DFS website. Individuals and units are encouraged to create their own FS posters pertinent to their specific operations and share them with other FS organizations through DFS.

WEBSITES

14. DFS maintains comprehensive Intranet and Internet websites that provide information on a variety of FS topics. Most Air Force units post their FS Program, current issues and links to a myriad of other sites and resources. Links to the recommended FS sites can be found on the DFS website.

15. Publishing SRs on the Defence Wide Area Network (DWAN) is allowed. It promises to significantly improve flight safety processes and the FS reporting culture. Still, care must be taken to ensure that it does not inadvertently compromise the reporting culture. Only completed reports may be posted on the Intranet after a diligent review of the SRs by senior FS staff. Completed SRs may be released to the DWAN as long as:

- a. personnel cannot be identified;
- b. no cockpit voice recorder (CVR) information, medical information or witness statements are included;
- c. reports are reviewed carefully to ensure that blame is not assigned to anyone; and
- d. a disclaimer is included in each report stating: “Flight Safety incident reports are produced under the authority of the Minister of National Defence (MND) pursuant to section 4.2(n) of the Aeronautics Act (AA) and in accordance with A-GA-135-001/AA-001 – Flight Safety for the Canadian Forces. They are prepared solely for the purpose of accident prevention and shall not be used for legal, administrative or disciplinary action.”

FS NOTICE BOARDS

16. Dedicated FS notice boards are an effective and efficient method of transmitting FS information. The purpose of FS notice boards is to remind personnel of the goals and impact of the FS program. To do this, FS notice boards should be erected in high-traffic areas and should be restricted to FS matters such as the “Debriefing” newsletter, the Flash bulletins, awards and AWS incidents. Notice boards should be prominent enough to be easily seen from a distance and bordered by red and white alternating stripes (minimum of 5 cm / 2 inches) to be effective. A pictorial sample of a suitable FS board can be seen on the DFS website.

AWARDS

OBJECTIVE

17. The objective of the FS Awards Program is to recognize the efforts of individuals, teams and organizations that have made a significant contribution to the objectives of the FS Program.

18. In order to qualify for an FS award, the action(s) of the nominee(s) must be outstanding for a “Good Show” and superior for a “For Pro”. Submissions must clearly describe the efforts of the individual or individuals nominated. The submission must describe the explicit actions and related facts demonstrating why the action(s) was / were exceptional and above and beyond the scope of normal duty for the individual.

19. Often a well-written FS nomination does not meet the excellence criteria for winning an FS award. But while the actions are commendable, they may be within the scope of the normal duties of the individual. As an example, a submission for a “For Pro” stated that a qualified technician working as part of a fuel tank load crew discovered hydraulic fluid on the bottom of the aircraft. The technician informed the Servicing Supervisor. Further investigation by the maintenance crew revealed a very serious problem with a hydraulic feed line for the landing gear. This nomination would likely be rejected because the technician performed his duties as expected.

TIMELINESS OF AWARDS

20. As with all promotional activities, the more timely it is, the more effective it is in raising FS awareness as well as the profile of the FS Program. Ideally, the period from the date of occurrence to the date of notification of approval or rejection should not exceed two months.

TYPES OF AWARDS

21. Awards are an excellent way of recognizing performance that is truly exceptional. In FS, individual or group performance that achieves the aims of the program should always be commended

and if significant enough, should be rewarded / heralded. Originators and reviewing authorities must give careful thought to which form of recognition would be most appropriate and timely.

22. The following are the official FS awards available through the CF. Acts that fit the descriptions hereunder should be submitted to the chain of command for recognition.

- a. Good Show;
- b. For Professionalism (For Pro).

23. A nomination for an official FS award may be denied at the 1 Div FSO or DFS level. It would be anticipated then that the unit CO, formation comd or manager would award a Commander's Commendation.

GOOD SHOW AWARD

24. The "Good Show" award is given when an aircraft accident or serious incident is averted or reduced in severity by a professional act that is clearly outstanding or above and beyond the call of duty.

25. A Good Show will be awarded when one or more of the following conditions have been met by an individual, crew or team:

- a. actions directly prevented loss of life or loss of an aviation resource;
- b. actions directly reduced the severity of an accident or serious occurrence;
- c. actions identified and rectified a critical hazard to FS in truly exceptional circumstances;
or
- d. actions demonstrated outstanding skill, knowledge, judgment or situation awareness in exceptional circumstances.

26. Good Show awards must be endorsed by the formation commander or equivalent position, the 1 Div FSO on behalf of Comd 1 or 2 Cdn Air Div and the DFS. Good Show Awards are approved by the CAS. The award is signed by both the CAS and DFS. The proposed Good Show Award citation is to be up to 500 words in length.

FOR PROFESSIONALISM AWARD

27. The For Professionalism award recognizes acts that may not qualify for the Good Show Award yet reflect a superior professional attitude that either reduced the severity or averted an aircraft accident or serious incident. Acts in the line of duty may qualify if clearly indicative of commendable extra effort.

28. A For Professionalism Award will be awarded when one or more of the following conditions have been met by an individual, crew or team:

- a. actions demonstrated superior skill in identifying and rectifying a significant hazard to FS in very difficult circumstances;
- b. actions demonstrated superior, timely and professional reactions in rectifying a significant hazard to FS in difficult circumstances; or
- c. actions exhibited a superior display of skill, knowledge, situation awareness or judgment in difficult circumstances that resulted in a significant contribution to the DND / CF FS program.

29. The For Professionalism award is recommended by the WComd or equivalent position, endorsed by the 1 Div FSO and approved by the Comd 1 or 2 Cdn Air Div. The For Professionalism scroll is

signed by the 1 Div FSO and Comd 1 or 2 Cdn Air Div. When doubt exists as to which FS award applies, originators are encouraged to make the nomination for the Good Show Award. The proposed For Pro Award citation is to be up to 300 words in length.

COMMANDER'S COMMENDATION

30. The Commander's Commendation is given for an act that does not warrant either a Good Show or For Professionalism Award but does deserve recognition. Given that the award submission has been endorsed by a wcomd before being staffed up the chain, the minimum award a nominee should receive is a Commander's Commendation.

DFS COMMENDATION

31. The DFS Commendation recognizes outstanding professional performance and dedication in the field of aviation safety. The DFS Commendation is awarded to deserving individuals who through their action have contributed significantly to enhance the capability of the Flight Safety Program across the Canadian Forces and who emulate the values and ethos promoted by the Program.

SICOFFA AWARD

32. Canada is a member of the international aviation association called Sistema de Cooperación entre las Fuerzas Aéreas Americanas (SICOFFA). This is a Spanish name meaning system for the cooperation of the air forces in the Americas. Each year SICOFFA provides member countries with an FS Award to recognize a deserving unit within their individual air force. The Canadian award is granted by CAS each year. The award is given to a wing or unit that has demonstrated the highest level of dedication to the furtherance of FS in the CF and, by their actions, been an exceptional example to others. It is intended to acknowledge a concerted effort over a period of time.

33. The guidelines for this award are for the unit or formation that has developed, implemented and performed at a high level of FS efficiency or has an FS program that is:

- a. innovative;
- b. proactive;
- c. comprehensive;
- d. effective; and
- e. enthusiastically embraced by all members of the FS team.

34. The SICOFFA FS award is originated by the 1 Cdn Air Div FSO, endorsed by DFS and approved by the Chief of the Air Staff. A call letter for nominations will be issued yearly by the 1 Cdn Air Div FSO.

AWARD STAFFING PROCEDURES

35. Nominations for Good Show and For Professionalism Awards shall be e-mailed to both DFS and 1 Cdn Air Div FS to reduce the time required for a final decision. Submissions are to follow the format at Annex A and are to include a fully detailed account in Word format that is suitable for use as the citation on the commendation scroll and be supported by a representative photograph of the nominee(s). The quality photograph, related if possible to the occurrence, shall be a high resolution unmodified file of at least 1 megabyte. If approved, the citation will appear outside the individual's community, so early reference should be made to the aircraft type. Formations should develop local staffing procedures to appraise the nomination. The FSOMS occurrence report, UCRs, technical references and other such

material should not be shown in the proposed narrative, but must be included as references in the submission to allow proper assessment. Units may be required to provide the 1 Div FSO or DFS staff with a copy of these references, on demand.

36. For Pro nominations will be reviewed by 1 Div FSO staff. If approved, 1 Div FSO will produce the award scroll, have it signed by Comd 1 Cdn Air Div and sent to the unit for presentation. DFS will be advised and the award citation will be forwarded for publication in Flight Comment and on the DFS website.

37. For Good Show Awards, once reviewed and endorsed by the 1 Div FSO staff, they will be forwarded to DFS. If approved, DFS will produce the award scroll, have it signed by CAS and sent to the unit for presentation.

38. If a nomination is not approved, DFS / 1 Div FSO staff, as applicable, will officially inform the submitting unit with a brief explanation as to why the nomination was rejected and if other forms of recognition are recommended.

39. The Good Show or For Professionalism scroll will be forwarded to the appropriate wing, base or unit FS staff, who will coordinate the presentation; local publicity is encouraged. A narrative describing the event will appear in the earliest possible issue of Flight Comment and on the DFS website.

Annex A
Chapter 5
A-GA-135-001/AA-001

ANNEX A – FLIGHT SAFETY AWARD NOMINATION FORM

FS AWARD NOMINATION					
UNIT AT TIME OF OCCURRENCE:					
NOMINEE(S)					
Rank	Surname	First name	Initial(s)	SN	Occupation
Type of award recommended	Good Show <input type="checkbox"/>	For Professionalism <input type="checkbox"/>	Other (specify):		
Reference document(s)	Technical Documents:				
	Occurrence #:				
	UCR #:				
	Other (specify):				
Photograph		The quality photograph, related if possible to the occurrence, shall be a high resolution unmodified file of at least 1 megabyte.			
Citation Language		English			
		French			
RECOMMENDED TEXT FOR AWARD CITATION (up to 500 words for Good Show and up to 300 words for a For Professionalism)					

RANK, NAME, INITIALS, POSITION	DATE
1. PROPOSER: Comments:	
2. SECTION HEAD: Supported : Yes <input type="checkbox"/> No <input type="checkbox"/> Comments:	
3. UFO: Supported : Yes <input type="checkbox"/> No <input type="checkbox"/> Comments:	
4. CO: Supported : Yes <input type="checkbox"/> No <input type="checkbox"/> Comments:	
5. WFSO: Supported : Yes <input type="checkbox"/> No <input type="checkbox"/> Comments:	
6. Wing Comd: Supported : Yes <input type="checkbox"/> No <input type="checkbox"/> Comments:	
7. Nomination sent by WFSO / D/WFS to 1 Cdn Air Div FS by e-mail, info copy to DFS 3-3	

CHAPTER 7 – OCCURRENCE REPORTING

References: A. Joint Program Office UAV Campaign Plan, February 2006

B. DAOD 2008-3 – *Issue and Crisis Management*

C. A-GA-135-003/AG-001 Airworthiness Investigator Manual (AIM)

AIRWORTHINESS INVESTIGATION AND THE FS PROGRAM

1. Chapters 7 to 11 of this manual deal with the airworthiness investigation of matters concerning safety as delegated to the AIA from the MND and outlined in the AIM (reference C). These investigation activities fulfil both a Flight Safety and an Airworthiness Program objective but are identical in their accomplishment. Because the FS Program predates the airworthiness Program, all Flight Safety Investigation terms such as FSIR are retained, even though they are the product of airworthiness investigation activities too. Of note, all investigation activities are conducted on behalf of the AIA through a system of qualifications, certifications and authorizations within the FS Programs established structure. Annex C explains the AIA's requirements and conditions for all FS positions with the associated certifications to carry out such investigations.

PURPOSE OF REPORTING

2. The purpose of FS reporting is to alert all concerned of circumstances that have resulted in or have the potential to cause damage to aircraft, air weapons or injuries to personnel. FS occurrence reporting and investigation allow appropriate PM to be identified and implemented by comd authorities.

DEFINITIONS

AIRCRAFT

3. A machine capable of deriving support in the atmosphere from reactions with the air.

- a. CF aircraft: Includes aircraft that have been accepted by the CF through purchase, loan or bailment. For FS purposes, aircraft belonging to the Air Cadet League of Canada and aircraft considered "military conveyance" as defined by the CTAISB Act. Aircraft under production for the CF are considered CF aircraft from the moment they leave the production line following final assembly, regardless of the actual acceptance date. This situation could be modified by contract provisions or special agreements.

NOTE

The *CTAISB Act* gives MND the responsibility for investigating occurrences involving military conveyances. A Working Agreement between DFS and TSB further articulates the generally accepted meaning of the *CTAISB Act* definition. While it is clear that civilian companies conducting day-to-day military contracted operations, such as contracted for Pilot ab-initio and primary flight training for the CF are always considered military conveyances, there remain significant grey areas that can only be resolved on a case-by-case basis between DFS and TSB. When there is a significant occurrence at a Wing involving a civilian air asset or civilian personnel, the WFSO should inform DFS so that the appropriate coordination with TSB can occur.

- b. Non-CF aircraft: These are subdivided as follows:
 - (1) Non-CF military aircraft. There are two categories of non-CF military aircraft:
 - (a) Allied military aircraft. These are aircraft belonging to an allied military force. When the CF assumes quality-assurance responsibility for these aircraft during production, repair, modification or overhaul, they are considered CF aircraft from the moment they are accepted by the contractor until they leave Canada or are accepted for flight by an aircrew of the country of ownership.
 - (b) Non-allied military aircraft. These are aircraft belonging to a non-allied military force.
 - (2) Civilian aircraft. This term is normally self-explanatory, but when a CF aircraft is lent or bailed to a civilian agency on a temporary basis, the CF continues to be involved.

COLLATERAL INVESTIGATION

- 4. This term applies to any investigation of an occurrence conducted by other than FS personnel or for purposes other than FS.

FS AIRWORTHINESS INVESTIGATOR

- 5. The airworthiness investigator is a FSO appointed by DFS / AIA who has received specialty training in aviation occurrence investigations. This airworthiness investigator is certified as qualified as delineated in the AIM and is authorized to conduct independent airworthiness investigations.

FS OCCURRENCE

- 6. Any event involving the operation of a CF aircraft or support to flying operations that constitutes an accident or incident. This could be an air occurrence (air accident or air incident, with or without weapons implications) or a ground occurrence (ground accident or ground incident, with or without weapons implications).

FS PUBLICATIONS

- 7. FS publications include all material published by DND for FS purposes, including posters, charts, booklets and the like, intended to assist FSOs and others in reporting procedures and cause factor assessment.

FS REPORTS

- 8. This term refers to all reports, whether oral or written, made under the authority of this manual.

AIR ACCIDENT

- 9. An event involving a CF aircraft between the time the first power plant start is attempted with intent for flight and the time the last power plant or rotor stops (for a glider, from the time the hook-up is complete until the glider comes to rest after landing), in which one or more of the following occurs:
 - a. someone is missing or receives fatal, very serious or serious injuries or illness (Black, Red or Yellow) as determined by a medical officer in accordance with CFAO 24-1. The

aircraft, its equipment or its operation must have contributed to the event for it to be classed as an air accident; or

- b. a CF aircraft is destroyed, missing or sustains very serious or serious damage.

NOTE

All FS occurrences exclude events caused by enemy action.

AIR INCIDENT

10. An event involving a CF aircraft intended for flight between the time the first power plant start is attempted and the time the last power plant or rotor stops. For a glider, from the time the hook-up is complete until the glider comes to rest after landing. To be considered an Air Incident, one or more of the following must occur:

- a. someone receives minor injuries (Green) as determined by a medical officer in accordance with CFAO 24-1, or there is risk of injury. The aircraft, its equipment or its operation must have contributed to the event for it to be classed as an air incident;

NOTE

During paratroops, SAR Techs and their equipment are considered part of the aircraft until the SAR Tech or equipment has safely reached the ground or water.

- b. a CF aircraft sustains minor damage;
- c. there is no injury or damage but accident potential did exist;

NOTE

This includes precautionary power plant shut-down, loss of cargo or slung loads, paratroops, no-damage lightning strike and any other event having accident potential, including damage from bird strikes.

- d. there is a malfunction of life-support equipment or a crew member experiences an aeromedical problem;
- e. there is a near collision (sometimes referred to as a near miss);
- f. there is a jettison, accidental release, inadvertent firing or hang-up of airborne armament equipment or munitions, or an aircraft occurrence involving armaments (see DAOD 3002-4 for additional procedures involving armaments and weapons); or
- g. there is damage to civilian or military property.

GROUND ACCIDENT

11. An event involving a CF aircraft occurs when there is no intent for flight, or when there is intent for flight but no power plant start has been attempted, or after the power plants and rotors have stopped, in which one or more of the following results:

- a. a person is missing or receives fatal, very serious or serious injury or illness (BLACK, RED and YELLOW) as determined by a medical officer in accordance with CFAO 24-1.

The aircraft equipment or its operation must have contributed to the event to be classified as a ground accident; or

- b. an aircraft is destroyed, missing or has sustained very serious or serious damage.

GROUND INCIDENT

12. An event involving a CF aircraft occurs when there is no intent for flight, or when there is intent for flight but no power plant start has been attempted, or after the power plants and rotors have stopped, in which one or more of the following results:

- a. a person receives minor or no injuries (GREEN or NIL) as determined by a medical officer in accordance with CFAO 24-1, or there is a risk of injury or illness. The aircraft equipment or its operation must have contributed to the event to be classified as a ground incident;
- b. the aircraft sustains minor damage;
- c. there is no damage but accident potential existed;
- d. there is a jettison, accidental release, inadvertent firing or hang-up of airborne armament equipment or munitions, or any aircraft occurrence involving weapons or armaments (see DAOD 3002-4 for additional procedures involving armaments); or
- e. there is damage to civilian or military property.

STAGE OF OPERATIONS

13. This term refers to the task that is being attempted or performed at the time of an occurrence. To ensure consistency in statistical analysis, the stages of operation are categorized as follows:

- a. Parked: Power plants and rotors are stopped, and the aircraft is stationary or unintentionally in motion; chocks may or may not have been used. No action is in progress that is directly associated with any other stage of operation.
- b. Maintenance: Power plants are stopped and maintenance duties, including servicing, refuelling, inspection, modification, repair and arming, are being performed on the aircraft. Towing, loading and run-up are excluded.
- c. Towing: The aircraft is being positioned, or prepared for positioning, by towing, pushing or bear trap handling.
- d. Loading: The aircraft is being loaded or unloaded with cargo, passengers or crew or is being prepared for loading or unloading.
- e. Ground running: The aircraft is stationary or unintentionally in motion, with a power plant being started, running or being shut down. Temporary pauses in the taxi stage are not categorized as ground running.
- f. Taxiing: The aircraft is intentionally moving under its own power on land, a flight deck or water before the application of power for take-off or after the direction of the landing roll is changed to taxi. It also includes aircraft moving by intentional coasting with power plants stopped or taxi operations where there is no intent for flight. It does not include air-taxiing by helicopters.
- g. Take-off: Lasts from the time that power is applied for take-off until reaching 500 feet

AGL or operating height, whichever is lower. For a deliberate touch-and-go landing, the take-off stage starts when power is re-applied.

- h. In flight: In flight lasts from the time the aircraft reaches 500 feet AGL or operating height, whichever is lower, until the landing phase is initiated. Helicopters are considered to be in flight when air-taxiing, slinging, hoisting, rappelling or hooking up or jettisoning loads. Occurrences involving paratroops are also included under this stage of operation.
- i. Landing: Landing lasts from the time the landing phase is initiated until the time the direction of the landing roll is changed to taxiing.

HAZARD CONDITION

14. Any actual or potential condition that results or can result in the degradation of the level of aviation safety.

UNIT OF OCCURRENCE

15. This term refers to the unit involved in the event or, in the case of an accident occurring at other than a CF wing or base, an appropriate unit close to the accident site.

UNIT OF OWNERSHIP

16. This term refers to the unit that has control and authority over the aircraft. For ground occurrences, the unit of ownership is the unit, wing, or base to which the aircraft is assigned in order to accomplish a specific operational or maintenance task. The only exceptions are:

- a. for aircraft that are undergoing depot-level maintenance at a contractor's plant, the appropriate NDQAR is the unit of ownership and ADM (Mat) / NDHQ is the headquarters;
- b. for new aircraft being produced for the CF, the applicable NDQAR assumes unit of ownership status from the moment that the aircraft leaves the production line following final assembly, regardless of the acceptance date;
- c. the provisions of subparagraphs above also apply to allied military aircraft that are being maintained or manufactured in Canada under a CF-supervised contract; and
- d. for other non-CF aircraft, the DFS shall make suitable arrangements.

SCOPE

17. A critical requirement of the FS Program is that occurrences be reported. If all events that cause a potential or actual compromise of flight safety are reported, then emerging trends can be identified and analyzed. The analysis then allows appropriate PM to be devised and implemented. Comds must encourage personnel to report all occurrences and hazards.

REPORTING INFORMATION AND SECURITY

18. Reporting FS information is vital to the FS and Airworthiness Investigation Program. However, there will be times when operational security (OPSEC) and operational / time sensitive information could have effect on active operations. In these cases, the method and security associated with reporting must be adjusted to counter the possible negative effects that public release of information or knowledge of an occurrence could impart on non-friendly forces. For example, it may not be appropriate to

transfer information in an unsecure manner on an occurrence for an air asset that is actively engaged in operations in a forward area since the knowledge of this event could be advantageous to enemy operations. For such circumstances, reports must still be made in a timely but secure manner so as to preclude any advantages such knowledge might impart on these non-friendly forces. FS reports containing classified information shall only be transmitted to DFS by secure means in an encrypted message or e-mail as per Annex E of Chapter 9.

REPORTING RESPONSIBILITY

19. Comd 1 Cdn Air Div retains responsibility for the reporting of all FS occurrences involving CF air assets. Comds of commands, formations, wings, bases, and units and managers of contracted organizations responsible for conducting or supporting air operations shall ensure that all FS occurrences, the applicable cause factors and PM are reported in accordance with the provisions of this manual. Comds shall ensure that all aircraft commanders, air vehicle operators and all other personnel supporting air operations are conversant with FS reporting procedures.

20. Injuries reported as part of an FS occurrence and under the authority of this manual must also be reported to the General Safety Program and will require investigation in accordance with A-GG-040-001/AG-001.

HAZARD REPORTING

21. Personnel at all levels must maintain vigilance for potential hazards within the work place. This could take the form of unsafe work habits, environmental conflicts, or management direction. When these hazards are recognised, personnel should be encouraged to report them to the FS representatives in their unit. The Hazard Report Form (Annex A) can be used to alert the FS System to potential problem areas. It is available in electronic format on the DFS website. This form may be submitted anonymously or it may be signed. When the unit FS NCM or Officer receives a Hazard Report it shall be assessed for its validity and possible PM to mitigate it. If the Hazard Report has been signed the person that submitted the report may be contacted for further clarification if desired.

22. The hazard shall be treated the same way as an occurrence with respect to the responsibilities for tracking and closing, and the report will be closed only when the PM have been implemented or rejected by the appropriate authority. Once a hazard report has been closed, it is essential that the FSO report back to the individual who submitted the report (if identified) on the action taken or why, as applicable, PM could not be implemented. This all-important step is key if we are aiming to encourage open and honest reporting of hazards.

INITIAL INCIDENT REPORT

23. The FSOMS is normally used to report a simple occurrence. If unable to access the FSOMS, a telephone call or a CF215 FS message report is to be submitted to the home unit for input to the database.

INITIAL ACCIDENT REPORT

24. Immediately following an accident or serious occurrence, call DFS at 1-888-WARN DFS (927-6337) and the chain of command (NDHQ / CanadaCOM / CEFCON / SOFCOM, and / or 1 Cdn Air Div AOC immediately. An initial report (IR) must follow. See Annex B for Accident Notification Procedures. DFS shall be contacted as soon as possible for any accident (Occurrence category 'A' to 'C' and / or for any occurrence having a SFCL equal or greater than High).

REPORTABLE OCCURRENCES

25. The following guidelines should be applied to ascertain if an event should be reported as an FS occurrence:

- a. Was there an injury or illness to personnel engaged in or supporting air operations, damage to a CF-owned aircraft or aircraft operated by or on behalf of CF / DND or damage to CF equipment used to support air operations?
- b. Was there potential for injury or illness or damage to an aircraft?
- c. Could reporting the FS event generate a PM that may prevent a similar occurrence?
- d. If the answer to any of these questions is yes, then an FS occurrence report shall be filed.

26. This concept can be directly applied to occurrences involving flight and support to flight operations; however, the concept is more difficult to apply where involvement in flight line operations is less obvious. If flight safety is not jeopardized, then the event should be reported as a general safety occurrence.

FS REPORT CLASSIFICATION

27. FS reports and supporting documentation will normally be unclassified. However, some of the information contained in these reports and documentation is protected under the *Aeronautics Act*, the *Canadian Transportation Accident Investigation and Safety Board Act*, the *Canadian Human Rights Act* and the *Access to Information Act*. Therefore, FS information will not be released without the express authority of DFS.

NOTE

FSOMS is not a classified system and shall not mix classified and unclassified data. In the case of a classified FS occurrence, the reporting unit shall provide the IR content relating to the classified FS occurrence over secure means. An electronic pro-formatted form can be downloaded from the DFS Intranet site at <http://www.airforce.forces.gc.ca/dfs/publications/docs/cf215.pdf>. The details of the occurrence will not be entered into FSOMS. DFS will retain ownership of the occurrence until it is deemed declassified. When the occurrence is declassified, the details of the investigation will be uploaded in FSOMS by DFS. Ownership of the occurrence will then revert to the reporting unit.

OBLIGATION TO REPORT

28. An FS occurrence IR is required for each separate event involving injury to personnel or damage to CF aircraft, air vehicles or support equipment, or when flight safety was affected. If two or more aircraft are involved in a single event, one FS report will normally be required.

OCCURRENCES INVOLVING NON-CF AIRCRAFT

29. Regardless of the report(s) required by non-CF authorities, occurrences involving non-CF aircraft shall be reported as directed in this publication.

AIRCRAFT AT CIVILIAN CONTRACTORS

30. FS occurrence reports are required for each occurrence involving aircraft where there is CF involvement during the periods specified as follows:

- a. new aircraft – except when special arrangements exist, from the time a CF aircraft leaves the production line after final assembly;
- b. aircraft on inspection, repair or overhaul – for the entire period an aircraft is at a civilian contractor facility; and
- c. allied military aircraft under CF-supervised contract – treat as a CF aircraft until it leaves Canada or is accepted by aircrew of the country of ownership.

CONTRACTED AIRCRAFT / FACILITIES

31. Reports are required for each occurrence involving a non-CF aircraft when there is CF involvement. In the case of contracted training, operational flying or maintenance, the applicable contract or memorandum of understanding (MOU) will govern the organization's FS reporting requirement and clearly identify the extent of CF involvement:

- a. non-CF aircraft and facilities under contract to provide support to CF flying operations at or below the wing / base or unit level shall be included within the existing wing / base or unit FS program and will report FS occurrences under the authority of the applicable wing / base or unit comd;
- b. FS reporting by contractors providing support through NDQAR or equivalent third-line maintenance facilities shall report occurrences through an assigned wing FSO familiar with those contractor operations; and
- c. CF aircraft FS occurrences involving civilian aircraft, civilian facilities and civilian aircraft operating at military facilities in Canada shall be reported to the nearest TSB Regional Office. Near misses or similar occurrences involving civilian ATC units are to be reported to the NavCanada Regional Air Traffic Services Officer, and a normal FS occurrence report is to be filed.

OCCURRENCES INVOLVING PARACHUTISTS / RAPPELLERS

32. Occurrences involving SAR Tech personnel jumping from either CF aircraft or CF military conveyance aircraft will be classified as FS occurrences if the event took place during the jump exit, parachute descent or parachute landing. These occurrences will be filed against the tail number of the aircraft from which they jumped. Occurrences after the SAR Techs are safely on the ground are to be handled through the General Safety Officer.

33. Parachute occurrences involving all other parachutists who are jumping from either CF aircraft or CF military conveyance aircraft will be classified as FS occurrences only if the event took place while on board the aircraft during the jump exit. If it is determined that the aircraft or aircraft equipment used did not contribute to the occurrence, then the occurrence shall be reported through the General Safety Officer.

34. Occurrences involving personnel rappelling from either CF aircraft or CF military conveyance aircraft will be classified as FS occurrences if the event took place during the rappel sequence until the rappellers unhook from the rope safely on the ground. These occurrences will be filed against the tail

number of the rappelling aircraft. Occurrences after the rappellers are safely on the ground are to be handled through the General Safety Officer.

OCCURRENCES INVOLVING UAVs

UNINHABITED AERIAL VEHICLE (UAV) DEFINITION

35. A UAV is defined as a power-driven aircraft that is designed to fly without a human operator on board.

CATEGORIES OF UAVs

36. UAVs are divided into three categories as follows:

- a. Tier one: high-altitude long endurance UAV (HALE) / medium-altitude long endurance (MALE) UAVs. These are large UAVs weighing up to several tonnes. They operate at high altitudes and have an endurance as long as 30 hours. They can require runway infrastructure similar to manned aircraft for launch and recovery.
- b. Tier two: tactical UAVs weighing up to 300 kg. They operate at intermediate altitudes as high as 15 km and have several hours endurance. They can be launched by catapult, by booster launcher, or from a short runway or conventional reinforced ramp.
- c. Tier three: small / mini / micro UAVs weighing only a few kg. They operate within a 1 km radius at altitudes of several hundred metres. Endurance is less than one hour. Ideally, they can be launched by hand and as a rule are man-portable.

UAV OCCURRENCE REPORTING

37. UAVs, like any other CF aircraft, are subject to the CF FS Program. UAV FS reporting takes into consideration design, function, complexity and level of skill required for their operation and maintenance. Damage to a UAV component that is designed as consumable will not normally be reported using FSOMS. The following guidelines will apply to the reporting of UAV FS occurrences:

- a. Tier one UAVs: no change from manned systems;
- b. Tier two UAVs: the following items will be reported:
 - (1) complete destruction or loss of UAV or major damage to it,
 - (2) engine failure during flight,
 - (3) injury or illness to personnel or potential for injury or illness,
 - (4) uncommanded control input,
 - (5) failure of flight reversionary system,
 - (6) collision with other aircraft or near miss,
 - (7) collision with ground vehicles or infrastructure; and
 - (8) violation of assigned airspace.
- c. Tier three UAVs:
 - (1) injuries or potential for injuries, and
 - (2) violation of assigned air space.

OCCURRENCES INVOLVING AIR WEAPONS SYSTEM

38. Occurrences that must be reported and, if necessary, investigated and monitored include:
- accidental functioning of an air weapons store;
 - inadvertent release or firing of an air weapons store;
 - hazardous malfunctioning of an air weapons system or air weapon, e.g. hang-up, runaway gun;
 - accident or incident which damages or could have damaged an air weapon or air weapons system;
 - any other occurrence associated with air weapons, air weapons system, or explosives/pyrotechnics used in support of mission that may reflect on the reliability of the air weapon, the air weapons system, the explosives / pyrotechnics, the operating procedures or personnel; and
 - any occurrence associated with air weapons, air weapons system, or explosives/pyrotechnics from the time it is removed from its ready-use storage with the intent to be used in support of an air mission to the time it is returned to a ready-use storage.

NOTE

In addition to the FSOMS occurrence entry, an Ammunition Defect, Malfunction Report and Disposal Request (CF 410), shall be submitted by the unit armament authority IAW A-GG-040-006/AG-002 for all occurrences where the ammunition / weapon / explosive is faulty, damaged, or the direct cause of the occurrence. The Flight Safety Report number shall be referred to in block 23 of CF 410.

NOTE

In situations where occurrences involving Air Weapons are entered into and investigated within FSOMS, the requirement to file an Ammunition Accident, Incident Report under the Explosives Safety Program is satisfied through the completion of the FSOMS occurrence.

FS OCCURRENCE MANAGEMENT SYSTEM

39. To evaluate the effectiveness of their FS Programs, comds and FSOs at every level must maintain records of every FS occurrence and hazard involving their facilities, equipment and personnel. The FS Occurrence Management System (FSOMS) is the primary tool to assist this process and is useful for identifying trends.
40. The FSOMS was developed to meet the automated support needs of the CF FS Program. It provides FSOs at all levels with an ability to input, record and track FS occurrences.
41. FSOMS shall be used to record all FS occurrences. If unable to access the FSOMS or if the situation warrants immediate notification of a serious occurrence, the FS occurrence information shall be forwarded to an FSO by telephone, fax or CF msg using the CF 215 FS message form. Routine FS occurrences will be submitted to the home unit FSO for input to the FSOMS database. As FSOMS does

not automatically inform comds of FS occurrence information, FSOs shall review FSOMS on a regular basis to ensure FS information has been distributed as required.

42. The unit of ownership is responsible for originating the FS report and ensuring it is entered in FSOMS. The unit of occurrence shall also ensure all additional reports related to the occurrence have been completed. In certain circumstances coordination between the unit of ownership and unit of occurrence may be necessary to ensure all pertinent FS information has been recorded.

43. FSOMS development and policy is a DFS responsibility. The training of FS personnel on the use of FSOMS to input initial investigation data and hazard reports is the responsibility of 1 Cdn Air Div FS and will be delivered through the Basic FS Course.

TRANSFER OF OWNERSHIP

44. In the case where a unit discovers and reports an occurrence that should be investigated by another unit, the reporting unit will liaise formally with the investigating unit and discuss transfer of the investigation. Upon agreement, the unit invited to investigate the occurrence will acknowledge acceptance of ownership by forwarding the correspondence to DFS 2, cc DFS 3-2 (FSOMS Manager) and request official transfer of the investigation. If agreement on ownership cannot be reached, the reporting unit can request that DFS 2 decide which unit shall be responsible for the investigation. DFS 3-2 will ensure that any transfers be documented as appropriate and actioned in FSOMS.

REPORT FORMS AND TAGS

FS FORMS

45. The FS forms can be downloaded from the DFS Website or may be obtained through normal supply action unless stipulated otherwise.

- a. Flight Safety Occurrence Report Initial (CF 215). A CF 215 shall be submitted to a Flight Safety Officer within 12 hours of an occurrence involving the security of a Canadian Forces aircraft. This form can be downloaded from the DFS Website.
- b. Flight Safety Hazard Report (DND 2484). A DND 2484 should be filed when personnel identifies any condition that has the potential to cause injury or damage during Canadian Forces air activities or support to the latter. This form is designed to track and record (through FSOMS) observations on hazardous conditions or deficiencies in the aviation system. A sample form can be found at Annex A. This form can be downloaded from the DFS Website.
- c. Report of Emergency Escape from Aircraft (DND 1056). A DND 1056 shall be submitted by every survivor who has abandoned an aircraft during an emergency situation, e.g. fire, ejection or bail-out. This form can be downloaded from the DFS Website; and
- d. Report of Emergency Landing/Ditching on Water (DND 724). A DND 724 can be downloaded from the DFS Website.

OTHER RELATED REPORT FORMS

46. The following reports and / or forms are often used by FSOs to ensure command authorities are properly advised of the circumstances surrounding an occurrence. The forms may be obtained through normal supply action.

- a. Report on Injuries or Exposure to Toxic Materials or Substances (CF 98). A CF 98 is used

to report serious or very serious injuries and fatalities. In situations where FS occurrences involve injury to personnel, FSOs should ensure the unit General Safety Officer (GSO) is aware of the injury.

NOTE

Entry of the injury into the FSOMS database does not ensure either a CF 98 Report on Injuries or Exposure to Toxic Materials or Substances or CF 663 Accident Prevention Report is completed or medical authorities are aware of the injury and/or exposure.

- b. Coroner's report: A copy of this report, if raised, shall be included with the medical report.
- c. Unsatisfactory Condition Report (UCR) (CF 777A). A CF 777A may be submitted to address conditions directly affecting the safety of flight. The report shall be submitted in accordance with C-02-015-001/AG-000. All FS UCRs shall be coordinated with the FSO.

NOTE

In situations where FS occurrence investigations reveal deficiencies with Aviation Life Support Equipment (ALSE), FSOs should ensure the unit ALSE Officer is aware of the ALSE implications to the FS occurrence. Entry of the occurrence into the FSOMS database does not ensure appropriate ALSE corrective action has been taken.

- d. Significant Incident Report (SIR). This report should be filed when an aircraft occurrence will likely create public interest. DAOD 2008-3 – *Issue and Crisis Management* governs the production of an SIR.
- e. Report of Emergency Landing on Water (DND 724). A DND 724 shall be submitted for every emergency water landing (ditch).
- f. Ammunition Defect, Malfunction Report and Disposal Request (CF 410). A CF 410 shall be submitted for ammunition defects and malfunctions as per A-GG-040-006/AG-002 - *DND Ammunition Accident/Incident/Defect/Malfunction Reports And Disposal Requests*.
- g. Aircraft Maintenance Management Information System (AMMIS) (CF 349 and 543). To be submitted by first-line, second-line and third-line maintenance facilities as required. Maintenance documentation produced following an FS occurrence must be annotated as FS as per C-05-030-001/AG-001. This annotation will ensure that the FS investigation is prioritized and that the chain of evidence custody is preserved.
- h. Unsatisfactory Condition Report (UCR).
- i. ADDN Occurrence Report: This form is for ships at sea.

AIRCRAFT ACCIDENT TAGS

47. Tag NSN 9905- 21 -872-3060 is to be used by investigators to identify and quarantine items during the conduct of FS investigations

Annex A
Chapter 7
A-GA-135-001/AA-001

ANNEX A – HAZARD REPORT FORM DND 2484



National Défense
Défense nationale

Flight Safety Hazard Report Rapport de sécurité des vols - Situation dangereuse

Ref: A-GA-135-001/AA-001 You can prevent aircraft accidents by reporting hazards. A flight safety (FS) hazard is any condition that has the potential to cause injury or damage. Please take a moment to complete this form. Pass the completed form to your FS staff as promptly as possible so this hazardous condition may be addressed BEFORE it causes an occurrence. The report may be submitted anonymously to any Flight Safety Office or mailed to DFS directly. Reports will be treated in the strictest confidence. The voluntary inclusion of contact details will help the Flight Safety staff to follow up the investigation.		Référence : A-GA-135-001/AA-001 Vous pouvez prévenir les accidents d'aéronef en signalant les situations dangereuses. Une situation dangereuse en sécurité des vols (SV) est toute situation risquant de causer des blessures ou des dommages. Veuillez prendre quelques instants pour remplir le formulaire. Remettez-le dès que possible au personnel de la SV pour que cette situation dangereuse puisse être traitée AVANT que ne se produise un accident. Le rapport peut être soumis de façon anonyme à n'importe quel bureau de la SV ou posté directement à la DSV. Les rapports sont traités en toute confidentialité. La mention volontaire des coordonnées du soumissionnaire permet au personnel de la SV d'assurer un suivi après enquête.	
Contact info: Director Flight Safety National Defence Headquarters Major-général George R. Pearkes Building 101 Colonel By Drive Ottawa ON K1A 0K2 E-mail: dfs.dsv@forces.gc.ca Phone: 1-888-WARN DFS / 1-888-927-6337		Information pour communiquer : Directeur - Sécurité des vols Quartier général de la Défense nationale Édifice Major-général George R. Pearkes 101, promenade Colonel By Ottawa (Ontario) K1A 0K2 Courriel : dfs.dsv@forces.gc.ca Téléphone : 1-888-WARN DFS / 1-888-927-6337	
Date reported (yyyy-mm-dd) - Date du signalement (aaaa-mm-jj)			
Name - Nom	Rank - Grade	Unit - Unité	Telephone - Téléphone
Hazard description (The hazard I observed is ...) Description de la situation dangereuse (La situation dangereuse que j'ai observée est ...)			
(Use additional sheet if needed – Utilisez une page additionnelle au besoin)			
Hazard severity (provide your personal evaluation of the potential consequences if this hazard materializes) (see reverse for definitions) Gravité de la situation dangereuse (fournissez votre propre évaluation des conséquences possibles si cette situation se produisait) (voir au verso pour les définitions)			
<input type="checkbox"/> Catastrophic Catastrophique	<input type="checkbox"/> Hazardous Dangereuse	<input type="checkbox"/> Major Importante	<input type="checkbox"/> Minor Légère
<input type="checkbox"/> Negligible Négligeable			
Hazard probability (provide your personal estimate of the likelihood of this hazard occurring) (see reverse for definitions) Probabilité de la situation dangereuse (fournissez votre propre estimation de la probabilité que cette situation se produise) (voir au verso pour les définitions)			
<input type="checkbox"/> Frequent Fréquent	<input type="checkbox"/> Probable	<input type="checkbox"/> Remote Faible	<input type="checkbox"/> Extremely remote Très faible
Suggestion solution – Solution suggérée			

DND 2484 (02-2011)

Design: Forms Management 613-993-4050
Conception : Gestion des formulaires 613-993-4062

Hazard definitions	Définition de situations dangereuses
Severity	Gravité
Catastrophic: All hazard conditions which would prevent continued safe flight and landing. Could result in death of the flight crew normally with loss of the aircraft.	Catastrophique : Conditions dangereuses qui pourraient nuire à la sécurité des vols et des atterrissages. Pourraient être une cause de mortalité de l'équipage de bord *accompagnée de la perte de l'aéronef, en général.
Hazardous: Hazard conditions that would reasonably be expected to result in a large reduction in safety margins or functional capabilities, including higher crew workload or physical distress such that crew may not be relied upon to perform tasks accurately or completely. Could result in death or major injury to aircraft occupants or major damage to an aircraft system. Could result in death or major injury to ground personnel or the general public.	Dangereuse : Conditions dangereuses qui risquent d'entraîner une diminution importante des marges de sécurité ou des capacités fonctionnelles, incluant d'accroître le charge de travail de l'équipage ou d'entraîner des souffrances qui pourraient empêcher l'équipage d'accomplir adéquatement ou entièrement ses tâches. Pourraient être une cause de mortalité ou de blessures graves aux occupants de l'aéronef ou de dommages graves à un système de bord. Pourraient être une cause de mortalité ou de blessures graves au personnel au sol ou au public en général.
Major: Hazard conditions that would reasonably be expected to result in a moderate reduction in safety margins or functional capabilities, including a moderate increase in crew workload or physical distress impairing crew efficiency. Possible physical distress, including injuries to occupants or minor damage to an aircraft system.	Important : Conditions dangereuses qui risquent d'entraîner une diminution modérée des marges de sécurité ou des capacités fonctionnelles, incluant d'accroître modérément la charge de travail de l'équipage ou des souffrances nuisant à son efficacité. Ces souffrances ou dommages pourraient consister en des blessures aux occupants ou des dommages mineurs à un système de bord.
Minor: Hazard conditions that would not significantly reduce aircraft safety, but would reasonably be expected to result in a slight reduction in safety margins or a slight increase in crew workload.	Légère : Conditions dangereuses qui ne réduiraient pas grandement la sécurité des vols, mais qui pourraient réduire légèrement les marges de sécurité ou la charge de travail de l'équipage de bord.
Negligible: No effect on safety. Negligible effect on safety margins.	Négligeable : Aucun effet sur la sécurité. Effet négligeable sur les marges de sécurité.
Probability	Probabilité
Frequent: Occurs continuously for the entire fleet or aircrew population.	Fréquente : Se produit continuellement dans toute la flotte ou pour tout le personnel navigant.
Probable: Occurs or likely to occur several times per year for the entire fleet or aircrew population.	Probable : Se produit ou susceptible de se produire plusieurs fois par année dans toute la flotte ou pour tout le personnel navigant.
Remote: Occurs or likely to occur one or more times per year for the entire fleet or aircrew population.	Faible : Se produit ou susceptible de se produire une fois ou plus par année dans toute la flotte ou pour tout le personnel navigant.
Extremely remote: Not expected to occur or likely to occur one or more times for the entire operational life of the fleet or aircrew population.	Très faible : Ne devrait pas se produire ou susceptible de se produire une fois ou plus pendant la durée de vie de toute la flotte ou pour le personnel navigant.

DND 2484 (02-2011)

CHAPTER 8 – POST-OCCURRENCE ACTIVITIES

PURPOSE

1. As indicated earlier, the objective of the FS Program is to prevent the accidental loss of aviation resources. Unfortunately, despite the best efforts of all concerned, accidents can still occur. Accordingly, wings and units must prepare sound plans for this eventuality to ensure that loss of life and injury to personnel is minimized, damage to property is minimized and evidence is collected and protected to facilitate a thorough investigation. In addition, aircraft accidents understandably attract a lot of attention. Therefore plans must include provisions for the timely release of accurate information to the chain of command, next of kin and the media.

RESPONSE PROCEDURES

EFFICIENT RESPONSE ELEMENTS

2. The CO, through the FSO, must ensure the unit is prepared to respond to any occurrence, regardless of location. The occurrence response plan shall include provisions for:
 - a. saving lives and preventing injury or further damage;
 - b. protecting the response team from hazards at accident sites as per Annex A; and
 - c. thorough investigation of every occurrence.
3. The elements of an efficient occurrence response are:
 - a. immediate, accurate and thorough reporting;
 - b. thorough independent airworthiness investigation leading to the discovery of cause factors and findings that identify PM;
 - c. implementation and recording of PM and feedback of information; and
 - d. periodically revisiting PM at a later date to ensure that they were properly implemented and have been effective.
4. Operation orders for CF activities involving air assets or support for air assets like exercises, operations and deployments on airshows shall include contingencies for FS occurrences. Comds should use this opportunity to assess the hazards of the operation and risks involved, and draw attention to specific areas where there might be particular concern. These should be highlighted in a statement on the overall importance of FS in the conduct of operations.

PLANNING REQUIREMENTS

5. Planning is required to ensure that evidence is protected and to conduct a safe and expeditious investigation. Time is most important in post-occurrence activities; evidence may change or be lost, or there may be another accident before PM can be implemented.
6. In preparing a response to an FS occurrence, DFS will:
 - a. maintain a suitable cadre of trained, authorized and accredited aircraft accident investigators as delineated in the AIM;
 - b. authorize the Div FSO to train and accredit airworthiness investigators as delineated in the AIM;

- c. maintain an adequate inventory of field investigation equipment including recording devices (audio and video), personnel protective equipment (PPE), communication devices, portable IM/IT and field navigation equipment;
 - d. maintain a permanently monitored occurrence notification system (1-888-WARN-DFS);
 - e. maintain arrangements for specialist investigation support from organizations such as AETE, QETE, DRDC Toronto and National Research Council (NRC);
 - f. maintain arrangements for coordinated investigations with other agencies within Canada (TSB) and with other nations (where feasible);
 - g. develop a process that can initiate investigations quickly and deploy investigation teams within 24 hrs domestically and 48 hrs internationally; and
 - h. develop a process that can be used to prepare, revise and finalize FSIs.
7. 1 Div FSO shall in relation to FS matters look after the following:
- a. ensure that units and suitable personnel receive adequate training and accredit trained investigators as authorized by the AIA;
 - b. provide guidance in the preparation of accident response plans and review the plans and checklists as part of FS surveys;
 - c. follow up on PM flowing from SRs; and
 - d. conduct trend analyses to provide FS advice to Comd 1 Cdn Air Div.
8. In many instances, action items are not the responsibility of the FSO. However, the FSO shall ensure that the appropriate actions are taken as required.

ACCIDENT RESPONSE PLAN REVIEW

9. Each unit shall develop an accident response plan and validate it to ensure that critical actions are not overlooked. This plan should be reviewed and exercised periodically. It shall be held by:
- a. the unit chain of command and UFSO;
 - b. the Duty Officer;
 - c. the Control Tower;
 - d. the Operations Section;
 - e. the Military Police; and
 - f. the local civilian police, fire halls, hospitals, ambulance services, telephone operators and information services.

ACCIDENT RESPONSE COMPONENTS

10. The response plan shall include, in order of precedence, those individuals to be advised. The Aircraft Accident Checklist at Annex B lists the actions anticipated from the organizations concerned in case of a serious accident.
11. The accident response plan should include:
- a. provisions for the immediate involvement of aeromedical personnel;
 - b. training of firefighting personnel in aircraft rescue techniques;

- c. availability of rescue personnel whenever flying is in progress, including personnel to disarm, remove or safety explosive devices and pressurized systems;
- d. provision of technical and operational advice to the pilot in an emergency;
- e. a checklist to be used during emergencies by personnel in key positions like CO, DCO, SAMEO, tower, operations, OSCER and FSO;
- f. procedures for recovery or diversion of aircraft;
- g. briefings to the local authorities on how to report an occurrence and what to do at the scene until CF authorities arrive, like liaising with coroner or police;
- h. alert the agencies that must respond to an off-unit site occurrence;
- i. communications for all rescue vehicles and agencies, e.g. Padre, Environmental Officer and PAO;
- j. the accident-rescue grid map of the airfield and surrounding area. Copies should be kept in the control tower, dispatch centres, OSCER vehicle, helicopters, ambulances, fire trucks, maintenance, and other vehicles that must respond to an accident or emergency;
- k. preparations for evacuation and medical treatment of casualties. Make arrangements with local hospitals, fire halls and police for assistance, including briefings on rescue procedures and toxicology requirements for personnel involved in the accident. Copies shall be kept in the tower, ambulances and accident response vehicles;
- l. the search-and-rescue (SAR) plan (water, land or air parties), arrangements for a search centre and for SAR support;
- m. considerations for runway clearance and diversion procedures to allow, if possible, the recording of evidence before wreckage is moved;
- n. procedures for runway clearance, including instructions for the selection, maintenance and use of heavy equipment, cranes, jacks, portable floodlights, spare wheels and slings;
- o. media response guidelines;
- p. security of the aircraft;

NOTE

Whenever sabotage is apparent or suspected, Security Orders for the CF apply.

- q. periodic review of instructions, including:
 - (1) the testing or practice of crash alarm systems;
 - (2) the accident rescue response procedures; and
 - (3) the use of training films and other aids;
- r. preparations for safeguarding evidence. Plans should include the following:
 - (1) making video recordings of emergency landings;
 - (2) guarding and protecting accident sites to protect evidence and any contaminated areas associated with the accident site. An accident security team shall be estab-

lished with a designated comd, who shall be responsible for:

- (a) if crash site is outside a defence establishment, coordinating with local police authority to identify CF security needs and ask for their support;
 - (b) seeking and issuing proper rules of engagement for military personnel;
 - (c) issuing, maintaining and using equipment to support guard operations;
 - (d) developing a shift system;
 - (e) making provisions for transport, money, rations and accommodation;
 - (f) ensuring that communications equipment is functional; and
 - (g) ensuring that provisions are made to set up a single controlled accident site entry / exit point at which appropriate protective instructions and kit will be issued;.
- (3) selecting and briefing alternate security comd and crew;
- s. establishing chain of command for site control, within or outside the defence establishment site, prior to and following the arrival of the FS investigation team;
 - t. selecting, maintaining and using equipment for the protection and collection of evidence;
 - u. using the services of the Recovery and Salvage Squadron (RASS) of ATESS for heavy equipment and diving or dragging equipment to recover wreckage, using both civilian and CF resources (see C-05-010-002/AG-000 – Aircraft Salvage Procedures); and
 - v. preparing for the commencement of the investigation by ensuring that perishable evidence is recorded, personnel involved and witnesses are isolated and requested to provide a written statement as soon as possible after the accident, personnel are instructed to take and ship samples, measurements are taken, accident site diagrams are prepared, appropriate medical exams are conducted, appropriate items are quarantined and impounded as required, witnesses (including start crews) are identified, and weather observations at the time of the occurrence are taken.

NOTE

Annex E amplifies details of the photographic requirements. Custody of photographs must be carefully controlled to ensure maintenance of the chain of evidence custody.

NOTE

A Report of Emergency Escape From Aircraft and / or Report of Emergency Landing on Water may also be required.

COMMUNICATIONS

NOTIFICATION OF FOREIGN COUNTRIES

12. When occurrences involve non-CF aircraft and / or locations and facilities, DFS shall notify the countries involved as required by NATO STANAG 3531, Letters of Agreement and other standing arrangements, so that the actual owners of the aircraft may discharge or take possession of their property and indicate what type of support they require from DFS.

REQUESTS BEYOND SUPPORTING WING CAPABILITY

13. Normally, the nearest practicable wing will be designated as the supporting wing. Requests for assistance that are beyond the capabilities of a wing or a supporting wing shall be directed to 1 Cdn Air Div / CANR Headquarters.

NOTIFICATION TO CORONER

14. In the case of fatalities, the provisions of the appropriate provincial coroner statute shall be respected. The coroner is responsible for establishing the cause of death and is the final authority for the removal of human remains.

RELEASE OF INFORMATION

PUBLIC AND MEDIA QUERIES

15. The release of information to the public is the responsibility of the Public Affairs Officer (PAO). Following an FS occurrence, the FSO or IIC shall maintain contact with the PAO to ensure timely and accurate news releases. Public and media interest must be anticipated and the FSO should be prepared to assist the PAO. When pressed for information, the FSO and IIC should be guided by DAOD 2008 and AIA delegated authorizations regarding release of information outlined in the AIM. If the occurrence is a significant event in that it involves either prominent persons or circumstances likely to create public interest, there will be a requirement to generate a Significant Incident Report.

16. The FSO and the IIC may be asked to answer questions concerning an occurrence and its investigation. At no time shall they admit Crown responsibility for any damage, no matter how obvious this liability may seem in the circumstances. They should reinforce that the mandate of the FS Program is to investigate to prevent future occurrences and the aim of the investigation is not to assign blame.

17. The investigation team members should be responsive to media or public requests for general or background information, and should always treat reporters politely. The PAO shall be notified of any intent by or request to a team member to conduct an interview related to the investigation.

18. Under no circumstances will the individuals involved in an FS occurrence be interviewed by the media until they are cleared to do so by the IIC.

BRIEFING TO NEXT OF KIN

19. The unit is responsible for keeping family members informed of the progress of an investigation. In the case where the accident involved casualties, the norm would be for DFS to provide the next of kin with an initial briefing describing the FSIR process and provide them with a copy of the FTI prior to its public release on the DFS website. The intent of conducting the initial briefings is to provide the NOK with an explanation of the investigation process and provide them with a copy of the FTI so they can get ready to address the press prior to DFS public release. DFS will also give family members a detailed briefing on the findings, causes and recommendations contained in the final FSIR prior to its public release. Close coordination with Wing and Unit commanders and their advisors is essential to meeting the aim of the briefings while minimizing stress on the NOK and survivors.

INFORMATION NOT TO BE RELEASED

20. To prevent impeding the investigation and to avoid premature or incorrect conclusions, the following shall not be released:

- a. the specific location of an off-site occurrence if rescue procedures would be impeded by sightseers;
- b. names of personnel killed, missing or injured until after their next of kin have been informed;
- c. detailed descriptions of injuries or fatalities;
- d. classified information and / or equipment, including weapons loading;
- e. privileged information, such as witness statements, related evidence and all flight recorder information;
- f. statements that tend to indicate responsibility of the Crown or any person;
- g. statements that imply failure of equipment or facilities;
- h. premature speculation that could jeopardize the conduct of the investigation;
- i. statements on causes to civilians, including news media representatives;
- j. accident statistics, rates, trends, costs of accidents and similar information without DFS authority; and
- k. when civilian or allied military aircraft or installations are involved, anything that has not been approved by their local representatives.

RELEASING INFORMATION TO CONTRACTORS

21. Releasing information to commercial firms under DND contract is subject to QR&O 19.36, in that only general information may be released immediately to contractors, field service representatives or technical representatives. In addition, they may be given other information only as authorized within security limitations to fulfil their contracts. There will be occasions when field service or technical representatives will be enlisted as specialist advisors to investigations. In that case they will be allocated observer status while supporting the investigation. Procedures regarding this situation are contained in the AIM.

RELEASING INFORMATION TO NATO NATIONS

22. NATO STANAGs provide guidance for the dissemination of FS information. STANAG 3101 provides for exchange of information concerning aircraft or missiles in common use. Information concerning FS matters arising from the operation of a nation's air services within or over another NATO nation's territory is exchanged under the terms of STANAG 3102.

ACCIDENT SITE HEALTH PROTECTION

23. At most accident sites, there will be dust, chemicals and / or fumes that can be toxic or very hazardous to health. Therefore it is essential to protect all personnel working at the accident site. Equipment must protect the lungs and skin from contact with and ingestion of particles and fumes. The CF has a legal obligation to ensure the safety of all personnel involved in the support of an accident investigation, including any agency or civilian contractor involved in work at the accident site or the salvage operation. Accident Response Plans must ensure that any information regarding dangerous substances is passed to these support agencies. Refer to Annex A and the AIM for further details.

24. The particulars of all personnel involved in post-crash activities will be recorded prior to entering the cordon placed around the accident site or at the quarantine facility. The nature and duration of each exposure to the accident site / quarantine and the PPE worn during that exposure will also be recorded.

This information will be placed on individual personnel files and medical records.

ACCIDENT INVESTIGATION KIT

25. Kits must be available at all wings and units operating in isolation. The FSO Accident Investigation Kit is referred to in the tool control system as TLD 1246. Units looking to re-supply their kits can get the necessary information from CFTCCS ATESS in Trenton. The FSO is responsible for the provision and safekeeping of these kits. Because of the value and attractiveness of many of the items, a member of the investigation team is required to be responsible for the kit when it is in use. Annex C lists the recommended items to be contained in the FSO accident investigation kit. There are three types of items:

- a. Hand-portable items. These are likely to be required at every accident site;
- b. Contingency items. These are heavy or bulky items that may be needed on site; and
- c. Facilities. These may be needed on returning from the accident site to complete the investigation.

PROTECTION OF EVIDENCE

SITE SECURITY

26. Security is normally required at every accident site and local police are usually the best option unless the site is very isolated or only accessible to CF / DND personnel. On defence establishments it is the responsibility of the MPs. If the site is outside CF military facilities or what is considered a defence establishment, the local police has jurisdiction. The aircraft commander, the CO or the senior capable survivor may obtain local police or other civilian personnel to perform the initial security.

27. Investigators are not to be tasked with the administration of the security party; thus a separate security comd shall be appointed, briefed and equipped to handle this responsibility.

28. With the exception of established field service representatives (FSR) under contract to DND, company or contractor representatives are not to be permitted access to an accident site or wreckage components unless authorized by DFS. In the case of FSIs, access to the accident site and the extent of investigative participation is left to the discretion of the DFS. Representatives of the news media should be asked to stay clear to protect the evidence on the crash site and for their own safety. They should be informed that a PAO will provide all details which may be released to the public. Cooperation of news photographers should be requested, but no force will be used by CF personnel to prevent them from gathering imagery. The PAO should be advised of any news media in breach of restricted access areas. Similar procedures are to be followed with owners of the property involved, remembering that a full and effective investigation may depend upon a property owner's cooperation.

29. However, when it is impractical or of doubtful value, the CO, having considered the security classification of the components, may decide not to secure the area. COMSEC authorities should be consulted when COMSEC material is present.

30. For accidents or forced landings outside Canada, security will likely be provided by the country of occurrence, particularly if that country is a signatory of NATO STANAG 3531. Whenever CF security is not provided, DFS shall be informed.

SECURITY DUTIES

31. Security personnel must be briefed to ensure that no evidence is disturbed or obliterated, unless it is absolutely necessary in order to save lives or to prevent injury or serious damage. Moreover, personnel shall have been briefed on accident site hazards and made aware of the PPE required when working on site. If possible, items should be moved only short distances, in straight lines parallel to other parts being moved to preserve the layout of the scene. Photographs and video should be taken before evidence is disturbed and notes made of any explosive charges made safe and pressure systems deflated. The security comd shall ensure that:

- a. doctors, coroners, first-aid personnel, firefighters, rescue teams, aircraft disarming and wreckage recovery personnel, and authorized investigators and photographers are allowed access and are not impeded in the performance of their duties;
- b. civil and military property is adequately protected;
- c. unauthorized persons are not permitted to enter the area; and
- d. following release by DFS, accident aircraft components appearing on the list of classified equipment are accorded appropriate security. Classified equipment may be removed from the site, on approval of the DFS investigator-in-charge (IIC) to ensure security control during the investigation. Ultimate disposal of classified equipment remains the responsibility of the NDHQ Item Manager, or DCOMSEC for COMSEC material.

SECURITY IN FOREIGN COUNTRIES

32. Outside Canada, the local authorities or locally provided security have jurisdiction for physical security. CF requirements should be made known and CF methods should be tactfully suggested. For details concerning the security of evidence within NATO countries, refer to STANAG 3531, available on the DFS website.

IMPOUNDING ARTICLES

33. Impounding articles refers to safeguarding material to prevent the loss or alteration of all records, documents, films, tapes, and forms that may be required for the investigation. The person designated as the impounding officer shall submit a statement of impoundment to the investigative authority, using the format shown in Annex F. All impounded items shall bear the following notation:

Impounded:(*time, date, month, year*) on the authority of:

(*full details of authority for impounding*)

(Signature and Rank)
Impounding Authority

ITEMS TO BE IMPOUNDED

34. The following items shall be impounded following an accident and may be impounded following a serious incident:

- a. the maintenance record set, current logbooks and computer records from ADAM or similar systems for the aircraft concerned and its components;
- b. pertinent Aviation Fuel DAND Sampler Reports (CF 907), Equipment Oil Sampling Register (CF 34-2) and Spectrometric Oil Analysis Reports;
- c. aircraft crash position indicator (CPI), flight data recorder (FDR) and cockpit voice recorder (CVR), or any other recording devices (e.g. HUMMS, MSDRS, HUD tapes), non-volatile memory chips;

NOTE

DFS will issue handling instructions for any recording devices removed from an aircraft involved in an occurrence.

- d. the flight authorization form, flight plan, passenger manifest and load sheets for the flight in question;
- e. data stored on the Mission Management Application (MMA) can be captured through the “impound” feature;
- f. the crew’s log books;
- g. unit training and standards records;
- h. tower log books and ATC communication and data recordings. In the case of civilian ATC facilities, contact DFS or DFS IIC, who will make the official impoundment request;

NOTE

For an occurrence where elements of both a flight safety occurrence and an aviation infraction / violation are present, DICP and DFS / AIA can, in order to conduct their respective investigations, request copies of the same ATC voice and data file recordings through their respective chains of command.

- i. pertinent meteorological records, forecasts and special observations;
- j. pertinent photographic records;
- k. radar unit log books, radar scope tape and voice recordings relating to the occurrence;

NOTE

These must be handled carefully, since they are irreplaceable.

- l. medical records and, in the case of fatalities, dental records and fingerprints from NDHQ / National Defence Identification Service (NDIS); and
- m. any other documents, forms, tapes, films or computer records that are pertinent, e.g., maintenance, arrestor cable or AMSE records.

QUARANTINING

35. Quarantining is the withholding and safeguarding of physical evidence or hazardous items. Such items may include complete aircraft components, equipment, stores, and production lots or batches. Quarantining shall begin as soon as a unit learns of an FS occurrence. Objects to be quarantined shall be removed from use immediately, and kept in a secure storage (size permitting). Alternate arrangements shall be taken to withhold and safeguard larger items.

QUARANTINING DOCUMENTATION

36. If the item has a log book, an entry shall be made that the item is quarantined under authority of this publication. In the case of an accident, the person designated by the CO as the quarantining officer shall submit a statement to the DFS IIC using the format at Annex F.

37. Aircraft equipment/parts shall be prominently tagged with both a CF-706 (Quarantine tag), and a CF942 (Material condition tag).

38. A register is to be kept in the secure storage to identify items held in quarantine and provide a link to the FSOMS occurrences. This register shall also be used to record disposal actions for quarantined items (e.g. shipment data, released to LCMM as per e-mail dated...)

ITEMS TO BE QUARANTINED

39. The following items, if applicable, shall be quarantined:

- a. the aircraft;
- b. the aircraft components (to include software and test equipment used to verify component serviceability) or personal equipment involved or suspected in the occurrence;
- c. the equipment or facilities that last serviced the aircraft with oxygen, POL, armaments or other stores;
- d. any other equipment such as that which may have hit the aircraft, cargo that caused problems, defective ground radar, arrestor cable, starting unit or other facilities; and
- e. any stocks, particular makes or batches of components, like stores and POL, that are suspect.

40. When the facility involved is a civilian contractor for into-plane services, quarantining the facility shall be the responsibility of the appropriate technical services detachment.

ONBOARD RECORDING DEVICES

41. To ensure valuable investigation data is not lost, the following policy will apply:

- a. for any FS occurrence with the potential to be upgraded to an accident or which will be reported by means of an FSIR, all onboard recording devices like the OLM, MSDRS, MDAU, CVR and FDR will be quarantined pending a decision on the requirement to retrieve the recorded data. This decision will be taken following consultation with unit FS Personnel when DFS if necessary. Until that decision is taken, personnel will avoid turning on the battery power or ground power to avoid losing recorded data, such as CVR information; and
- b. the quarantine will remain in effect until the data has been successfully downloaded and is proven usable for evidence purposes.

FLUID SAMPLING

42. Fluid sampling is the gathering and submission of specimens of POL and other fluids for analysis. Sampling shall begin as soon as a unit learns of an occurrence. In the case of an accident, the sampling officer, usually the AFSO, must submit a statement of impoundment to the DFS Investigator using the format shown at Annex F. Sampling procedures shall be as directed in applicable CFTOs; if not specified, use sound engineering practices to prevent further contamination. If contamination is unavoidable, record its nature and if possible obtain a sample of the contaminant. When possible, more than one sample should be taken from each source.

43. Ideally, all fluid sample analysis should be done at QETE. However, the need to avoid operational delays may dictate that a preliminary analysis be conducted locally. Coordination with QETE shall be carried out prior to any local fluid sample testing and QETE will provide either direct or delegated oversight of the tests. In this case, a second set of fluid samples will be sent directly to QETE for analysis.

44. Unless clear evidence exists that contamination or other component breakdown did not contribute to the occurrence, the following items must be sampled:

- a. all entrapped fluids in any wreckage;
- b. all entrapped fluids in any failed or suspect fluid systems such as fuel, oil, hydraulics and oxygen along with associated filters; and
- c. all ground equipment (e.g. LOX/HOX cart, fuel bowser) and facilities (e.g. fuel tank) involved.

CUSTODY OF SAMPLES

45. Samples must be analyzed as quickly as possible. If duplicate samples are taken they should be retained by one of the following until they are released:

- a. FSO or D/FSO;
- b. DFS;
- c. CO or designate; or
- d. a CF-approved laboratory when authorized by one of the above and when overseen by QETE.

NOTE

Samples shall be labelled with the source component or item, the section or system of that item, the date and time of sampling, the nature of the sample fluid with any known or suspected contaminants, and any other information which will assist in the analysis.

46. The Fluid Sampling Kit (NSN 8115-21-886-4126) should be used, and is to be sent to QETE in accordance with transport instruction contained therein. QETE will send a replacement kit on request.

AUTHORITY TO ACCESS QUARANTINED / IMPOUNDED ITEMS

47. The DFS IIC, WFSO, UFSO, AFSO (Aircraft Fluid Services Officer) or authorised individuals, are the only people to have access to quarantined/impounded items.

LIFTING OF QUARANTINE / IMPOUNDMENT

AUTHORITY TO LIFT QUARANTINE / IMPOUNDMENT

48. DFS is the authority to lift quarantine / impoundment. This authority is delegated, with the exception of photographic / imagery evidence, in order of precedence as follows:

- a. for Class I and II investigations directed by DFS: the IIC; and
- b. for Class III and IV investigations:
 - (1) the WFSO or FSO, and
 - (2) the CO or a CO's delegated person of authority having the required knowledge to ascertain that the lifting of the quarantine / impoundment of item(s) will not affect the conduct of the investigation.

NOTE

Due to Privacy Act considerations, the DFS / AIA retains the authority for the release of all photographic / imagery evidence.

PROVISION FOR RECORDING DEVICES

49. Lifting of quarantine for recording devices can only be done once the agency charged with producing the data has advised the applicable authority that the information was successfully downloaded and is usable and that a printed copy of the data has been produced.

RECORDING THE LIFTING OF QUARANTINE / IMPOUNDMENT

50. Whenever log book entries have been made impounding or quarantining an item of evidence, the following endorsement shall be made in the log book on release of the item:

Released (*time, date, month, year*) on the authority of:

(*full details of authority for lifting impounding / quarantining*)

(Signature and Rank)

Impounding / Quarantining Lifting Authority

NOTE

For aircraft maintenance record sets, see C-05-005-P04/AM-001.

DISPOSAL OF QUARANTINED / IMPOUNDED EVIDENCE

51. Disposal instructions for certain items may only be issued by the appropriate authority at

higher HQ, e.g. the applicable item manager at DAEPM. Before issuing such disposal instructions, the authority concerned must confirm whether the item is to be shipped under an FS quarantine or is to be released from quarantine.

52. Disposal instructions will include one or more of the following actions:

- a. DFS handling instructions for the FDR, CVR, MSDRS, HUMMS or any other recording devices from the occurrence aircraft;
- b. repair or return the items to normal use, including the return of personal property to the rightful owner;
- c. return the items to supply or forward for repair and overhaul;
- d. forward the items to a specified agency, e.g., QETE, AETE or contractor, for further investigation and analysis. Items are to remain under the FS quarantine and must be accompanied by sufficient details to describe the occurrence (e.g., UCR, CF 543, initial / supplementary report). Pack such parts in accordance with D-LM-008-001/SF-001 – Specifications for Methods of Packing, and A-LM-187-001/JS-001 – Packing and Preservation General Procedures;
- e. retain the items for a specified period; or
- f. scrap the items.

CIVILIAN INTO PLANE SERVICING FACILITY

53. When a civilian into-plane servicing facility under DND contract has been quarantined by the appropriate NDQAR, the release from quarantine shall be carried out by the CFQAR.

PROCESSING OF SPECIAL EQUIPMENT

54. Certain items must be handled with particular care and caution to avoid personnel injury or equipment damage and to prevent further damage that might hinder the investigation. Specific handling instructions are outlined below.

ESCAPE SYSTEMS

55. If the occurrence involves an ejection seat or canopy, it should not be moved before the AETE specialist arrives on site.

56. Escape system components involved in ejections or damaged in accidents are to be photographed using close-up, high-quality colour photography before any on-site movement. All escape system components must be safetied by an AETE specialist prior to being shipped as per IIC instructions. Such items include ejection seats and all related components, e.g., leg straps, seat-pack shells, seat-pack / torso-vest contents, and parachutes. These components are to be packed in accordance with appropriate CFTOs to ensure that they arrive at AETE in the same condition as found at the accident site. Applicable armament orders shall be observed before shipping any armament component, and the parts shall be packed in accordance with CFTOs.

57. Ejection equipment is not to be dismantled and parachutes are not to be repacked in their original enclosures. This equipment is to be packaged so as to prevent further damage in shipment. If the seat rocket has not fired, separation of the catapult tubes could cause the rocket to ignite unless the seat is made safe by an AETE specialist.

AVIATION LIFE SUPPORT EQUIPMENT

58. In all ejections and in accidents involving injuries, all aviation life support equipment (ALSE)

and all items of apparel must be suitably packed, annotated, and shipped to DRDC Toronto. DRDC Toronto should be consulted on proper packing / shipping procedures. Such items include aircrew helmets, oxygen masks, survival vests and contents, immersion suits, anti-G suits, handwear, footwear, flight clothing, and underclothing such as thermal vests, T-shirts and turtlenecks. To preserve the integrity of evidence, in-depth investigation of these items should not be attempted without the approval of DRDC Toronto. These items are to be struck off the appropriate inventory before shipping, as they will not be returned by DRDC Toronto. Personally purchased survival items, crests and badges are not to be removed. They will be returned to the owner when the DRDC Toronto investigation is completed.

DISCLOSURE OF RECORDED INFORMATION

TREATMENT OF RECORDED INFORMATION AS PRIVILEGED

59. The data from CVR, FDR or other cockpit flight-recording device shall always be treated as privileged. Except for specific training, maintenance, or engineering test and evaluation activities duly authorized by DFS, under no circumstances shall CVR, FDR or other Cockpit Flight Recording Devices information be downloaded, viewed or released.

DOWNLOAD FOR TRAINING PURPOSE

60. Under no circumstances shall data from CVR recorder be used for training purposes without the prior approval of DFS. Any unit that utilizes recording device information, such as HUD tape or video, for training purpose during post-flight debriefing of students, etc. is authorized to download/review recorded information for that specific purpose. However, the data shall be treated and handled in accordance with published training procedures and not released or used for any other purposes. If, during the review of recorded information it is discovered that there has been a Flight Safety Occurrence, the further review of the information will be stopped, and the Unit Flight Safety Officer contacted for further direction. A flight safety occurrence will be filed.

NOTE

If an aircraft is involved in an accident or other flight safety occurrence, the recording device information shall not be downloaded for training debriefing, maintenance-related activities, or engineering test and evaluation unless specifically authorized by DFS.

DOWNLOAD FOR MAINTENANCE PURPOSE

61. The CVR/FDR may be removed or downloaded to assist with maintenance-related activity only when conducted in strict accordance to the following provisions:

a. FDR:

- (1) No person, including any person to whom access is provided to the privileged representation shall knowingly communicate it or permit it to be communicated to any person. This implies that:
 - (a) Information from FDR shall not be used for any administrative, disciplinary proceedings or punitive actions,
 - (b) Information from FDR information will not be accessible through the Ac-

cess to Information Act (ATI), and

- (c) Crew identities shall not be released without their explicit consent;
 - (2) The data shall solely be used for the purposes of maintenance activities related to aircraft systems;
 - (3) Instructions for periodic FDR maintenance, data download, and calibration must be established for each fleet. Frequencies for these maintenance activities are to be detailed in the FDR maintenance schedule applicable for each fleet;
 - (4) Data retrieved from the FDR shall be copied integrally and steps be taken to ensure that no information is lost, altered, or destroyed as a result of the downloading;
 - (5) Once every 12 months, the FDR downloaded data as well as the correlation data are to be sent to the National Research Council (NRC) Flight Data Recorder Playback Center for verification of the recorded parameters and accuracy. The frequency of the FDR data download may be increased, if so requested by the AIA, to verify the accuracy or the reliability of the system.
- b. CVR:
- (1) Instructions for CVR periodic maintenance, data download, and calibration must be established for each fleet. Frequencies for these CVR maintenance activities are to be detailed in the maintenance schedule applicable for each fleet; and
 - (2) Once every 12 months, the CVR data will be downloaded and sent to NRC Flight Recorder Playback Center for the purposes of validating the quality of the recording and the serviceability of the recorder. The frequency of the downloads may be increased, if so requested by the AIA, to verify the correct functioning of a recording system.

NOTE

If the capability to download the CVR data does not exist, then the complete CVR unit must be sent to NRC for analysis.

NOTE

CVR, FDR, and other Cockpit Flight Recording devices (including data) that are removed / downloaded for maintenance-related activities do not need special documentation; however, the provisions stipulated in the paragraph above are to be upheld.

DOWNLOAD FOR ENGINEERING TEST AND EVALUATION

62. The FDR may be removed or downloaded to assist with engineering test and evaluation conducted by AETE. Removal and download shall only occur when called for in a test plan approved by the CF Test Flight Authority.

DOWNLOAD OF OTHER RECORDING DEVICES

63. For the purposes of this publication, specifically with respect to flight safety privilege and the authority to download data, any recording device, including a digital imagery and/or audio recorder, that provides details on crew actions and communications shall be treated as a CVR. Any device that only captures flight parameters, such as engine and flight instruments, shall be treated as an FDR.

HANDLING RECORDED DATA

64. All documents associated with a Cat. “A” accident must be handled as prescribed in C-05-005-P04/AM-001, Part 1

- a. whenever an FDR is required by this order, it must be operated continuously from the time electrical power is first available to the recorder before the flight to the time electrical power is removed from the recorder after the flight;
- b. except for data erased as authorized in paragraph (c) below, each certificate holder shall keep the recorded data prescribed by this order, until the aircraft has been operated for at least 25 hours. When an FDR is removed from an aircraft the FDR must either:
 - (1) be retained until 25 hours have been accumulated by the aircraft; or
 - (2) be copied and the data be retained until 25 hours have been accumulated by the aircraft;
- c. a total of one hour of recorded data may be erased for the purpose of testing the flight recorder or the flight recorder system;
- d. any erasure made in accordance with this paragraph must be of the oldest recorded data accumulated at the time of testing; and
- e. in the event of an occurrence (incident or accident) that requires notification of the DFS, the certificate holder shall remove the recorder from the aircraft and quarantine the recorded data.

DATA CONVERSION DOCUMENTATION

65. Documentation sufficient to convert recorded data into the relevant engineering units and discrete values must be maintained by the certificate holder.

FDR DATA CORRELATION

66. A correlation must be established between the values recorded by the FDR and the corresponding values being measured in the cockpit or on the aircraft. The correlation must contain a sufficient number of correlation points to accurately establish the conversion from the recorded values to engineering units or discrete state over the full operating range of the parameter. A single correlation may be established for any group of aircraft:

- a. that are of the same type;
- b. on which the flight recorder system and its installation are the same; and
- c. on which there is no difference in the type design with respect to the installation of those sensors associated with the FDR system. Correlation documentation must be maintained by the certificate holder.

RECORDER MAINTENANCE AND TESTING

67. The data recorders shall be serviced and tested regularly. They are critical for occurrence investigation, especially when the crew is unavailable and the aircraft is totally destroyed, in which case there is little evidence available to the investigators.

68. In the event of an occurrence that requires an FS investigation, the unit shall remove the recorder

from the aircraft and quarantine the recorder data. No person shall use or erase any communication pertaining to the flight under investigation that has been recorded by the recorder without the express permission of DFS.

ON-BOARD RECORDING

69. The on-board recording of digital communications is required by all CF aircraft equipped with a CVR and FDR, which are equipped to utilize digital ATS communications and operate in a CNS / ATM environment.

Annex B
Chapter 8
A-GA-135-001/AA-001

ANNEX B – AIRCRAFT ACCIDENT CHECKLIST

References: A. QR&O 19.36 to 19.375 and 19.41

B. DAOD 1002-2, Informal Access to Personal Information

C. DAOD 2008-0, Public Affairs Policy – Authorities Table

D. DAOD 2008-3, Issues and Crises Management

E. DAOD 2008-4, Public Affairs, Military Doctrine and CF Operations

F. DAOD 3002-4, Ammunition or Explosives Accident, Incident, Defect or Malfunction Reporting.

G. DAOD 2008-1, Accountability and Responsibility for Public Affairs

ACTIONS ON NOTIFICATION OF AN AIRCRAFT ACCIDENT

1. Personnel at the site of an accident and for every occurrence shall ensure that action is taken to prevent loss of life, injury to personnel or damage to property and to protect evidence and classified material against loss, alteration or compromise, irrespective of the locations described in the following paragraphs.

TELEPHONE NOTIFICATION

2. When information is received by telephone, the following should be recorded:
- a. the informant's name, location and telephone number;
 - b. the time of the accident;
 - c. whether there is a fire;
 - d. exact location of accident site and its accessibility;
 - e. location and condition of the crew and passengers;
 - f. immediate medical response no matter what the condition of crew and passengers;
 - g. in the case of a fatality, whether the coroner has been advised;
 - h. whether there is serious property or environmental damage;
 - i. the type and tail number of the aircraft;
 - j. where the rescue team will be met;
 - k. whether local emergency services have been notified;
 - l. any other information that may be volunteered; and

NOTE

The checklist should include the need for phoning the informant back to check authenticity.

- m. the times at which the information was received and when it was relayed to designated recipients.

NOTE

Before ending the telephone call, caution the informant to remain clear of the wreckage, and ask the caller to attempt to deter others from entering the area or tampering with evidence. Suggest that this could well jeopardize the investigation and warn of hazards such as fuel fumes, fire, explosives, dust from composite materials, ejection seats, armaments, jettisonable tanks and pressurized systems.

RESPONSE PROCEDURE AT ACCIDENT SITE

IMMEDIATE RESPONSE

3. For every aircraft accident, personnel at the site shall ensure that the accident is reported as quickly as possible and that action is taken in conjunction with local authorities to:
 - a. prevent loss of life, injury to personnel or damage to property (including arranging for medical aid, fire suppression, making explosives safe, and SAR); and
 - b. protect evidence and classified material against loss, alteration or compromise (including arranging for guards, crowd control and photographing of wreckage before it is removed from runways or before the onset of snow).
4. The immediate response to an accident will normally be under the direction of the firefighters, and if fire or fumes are involved, self-contained breathing apparatus, coveralls, gloves and eye protection may be required. Only firefighters and medical personnel should be directly involved in the immediate response.
5. There must be a strictly enforced policy of no smoking, eating or drinking at the site, as these activities promote the inadvertent ingestion of potentially hazardous or toxic materials from the wreckage.
6. Establish a protected entry point to the site, at which a facility should be erected to enable access control, the donning and doffing of protective equipment, cleaning of boots and washing of hands before departing the site. All disposable gear such as masks, coveralls and gloves shall be removed and disposed of in accordance with appropriate directives.

HEALTH PROTECTION

7. After rescue activity is complete and the immediate threat to personnel and property has passed, the OSCER will give the DFS IIC access to the site. The IIC shall inspect the site in full protective gear to assess hazards. The following should be considered (IAW publication C-05-010-002/AG-000):
 - a. Fire hazards. Extreme caution should be exercised if the site is contaminated by fuel. Smoking is prohibited. Aircraft batteries should be disconnected as soon as possible.
 - b. Explosion hazards. Qualified technicians should safety all explosives including armaments and explosive-activated devices. Death or serious injury can also be caused by a tire exploding due to a damaged wheel.

NOTE

All personnel are to be kept a minimum of 500 feet from explosive devices and pressurized systems that have been subjected to accident impact forces or fire.

- c. Blood-borne pathogens. All blood, tissue and certain body fluids should be treated as hazardous. Puncture-resistant disposal containers must be available at the site if any of these substances are present. Proper biological hazard warning signs must be placed on the containers. Therefore, FS investigators and immediate accident responders should be inoculated for Hepatitis A and B. Non-disposable equipment such as boots and goggles shall be disinfected at the site.
 - d. Composite materials and toxic substances. Smoke and burning composite materials are toxic and hazardous to personnel and aircraft systems. Carbon fibre released from burning composite materials can be inhaled, become embedded in the eyes, or penetrate the skin or aircraft electrical system with adverse effects. Fibres can also be released in the atmosphere when this material is impacted or cut. For further details refer to C-05-040-012/TS001 – Post Aircraft Accident/Accident Release of Carbon Fibre. Exposed carbon fibre should be covered with plastic or sprayed with shellac. Some aircraft also contain plastics or other materials that give off toxins that may be inhaled or absorbed on exposure. Battery acid and Skydrol hydraulic fluid are highly corrosive.
 - e. Radiation hazards. Although efforts have been made to remove equipment containing radioactive substances, many of the older aircraft still have flight instruments containing radioactive material. The main hazard is from inhalation and ingestion of radioactive particles in dust when this equipment is broken or burnt. Refer to CFAO 34-24, Ionizing Radiation Safety.
 - f. Parts and equipment containing radioactive material are listed in C-02-040-003/TP-000. If a radioactive hazard is suspected, the Base Radiation Safety Officer shall be notified.
8. Once the site survey has been completed, the investigator will determine the protective clothing and PPE that personnel must use.

RESPONSE PROCEDURE FOR FIRST UNIT ADVISED

NOTE

When the unit of occurrence is also the unit of ownership, the actions listed in Para 10 also apply.

9. On the declaration of any air emergency in the area of a flying unit, the occurrence response plan should be implemented immediately. This ensures that medical, firefighting and rescue services are alerted and brought into position. Occurrences at non-flying units should be referred immediately to the nearest flying unit. The following actions may be required after an occurrence:
- a. preventing loss of life, injury to personnel and damage to property through the provision of medical aid, firefighting, SAR and safetying of explosives, pressure systems and ejection seats;

- b. security and protection of evidence, including wreckage (specific instructions regarding classified equipment are to be obtained from wing security officer. If COMSEC material is involved, the wing COMSEC officer should be consulted);
- c. B-GA-100-001/AA-000 and CFMO 42-04 require that all personnel involved in an air or ground accident or physiological incident receive a medical exam, toxicology screen and human factor assessment. This should be completed as soon as practicable following the occurrence.
- d. If there is a possibility that a “D” Category occurrence may be upgraded to an accident, then the medical requirements of CFMO 42-04 must be implemented; all personnel involved in an air or ground accident or physiological incident receive a medical exam, toxicology screen and human factor assessment. This should be completed as soon as practicable following the occurrence;
- e. reporting the occurrence as quickly as possible to the unit of ownership;
- f. taking photographs of the wreckage and other evidence before it is disturbed or obliterated by the elements;
- g. making a preliminary wreckage diagram should it be necessary to move the wreckage prior to the arrival of the DFS investigator;
- h. quarantining, impounding and / or taking samples from applicable items of evidence;
- i. locating and identifying all witnesses to the occurrence, including start crew supervisors and acquaintances of personnel involved (see CFAO 21-9 and A-GA-135-002/AA-001, Occurrence Investigation Techniques);
- j. implementing investigative procedures as required;
- k. assisting investigators by providing the following:
 - (1) administrative and logistic support,
 - (2) wreckage search-and-recovery teams
 - (3) transportation, and
 - (4) accommodation;

NOTE

If provision of these services is beyond the capability of the unit, refer to para 16 Recovery and Salvage section below.

- l. When an FS investigation is convened, the recovery and salvage officer (RASO) assigned to the occurrence is to abide by the recovery instructions from the IIC. Prior to the complete recovery/salvage of the aircraft, the RASO is to liaise with the appropriate DFS investigator (see also DAOD 4003-0, Environmental Stewardship);
- m. instituting or recommending measures to remedy the causes of the occurrence;
- n. observing the deadlines and routing for all reports by the unit of ownership; and
- o. disseminating information relating to the occurrence.

RESPONSE PROCEDURE FOR UNIT OF OWNERSHIP

10. On the declaration of any aircraft accident involving a unit aircraft, the occurrence response plan should be implemented immediately as follows:

- a. ensuring that arrangements at the accidents site comply with above section entitled Response Procedures for Unit of Occurrence, and providing the necessary assistance to the unit of occurrence;
- b. ensuring that the occurrence is reported as quickly as possible. The following may require notification or direction with respect to impounding or quarantining, depending on the severity of the occurrence:
 - (1) CAS, DFS (1-888-WARN DFS);
 - (2) 1 Cdn Air Div AOC or through CanadaCOM; CEFCOM or CANSOFCOM;
 - (3) the wing or unit of occurrence;
 - (4) unit(s) of last fuelling, servicing;
 - (5) last unit of departure and other units involved;
 - (6) other units involved (for example, the army unit owning the vehicle being airlifted having developed a fuel leak when airborne);
 - (7) TSB thru DFS if the occurrence involves civilian aircraft and /or ATC agencies;
 - (8) NDQAR (if the occurrence involves a civilian maintenance or servicing contractor); and
 - (9) Director Quality Assurance (if the occurrence involves aircraft at NDQAR).

NOTE

If an Address Indicator Group (AIG) is used, ensure that all other applicable addressees are also included in the message.

- c. Wing maintenance shall immediately refer to their copy of the appropriate security guide, i.e., C-12-XXX(A/C type)-000/AS-000, and prepare a list of classified equipment carried by the accident aircraft. Copies of the classified equipment list are to be given as soon as possible to the following personnel at the designated support wing and NDHQ:
 - (1) the Wing Security Officer,
 - (2) the FSO,
 - (3) the DFS IIC, and
 - (4) NDHQ / DAEPM for the item manager;

NOTE

The wing custodian, assisted by appropriate personnel, shall determine the type and quantity of COMSEC equipment and material on board. The reporting procedures for loss and / or compromise of COMSEC material are contained in CIS/01/2, CF Instructions for COMSEC Material and Accountable Publications. This report must be sent without delay.

- d. quarantining, impounding and / or taking samples from applicable items of evidence;
- e. locating and identifying all witnesses of the occurrence, including start crews supervisors, and acquaintances of personnel involved (see CFAO 21-9 and A-GA-135-002/AA-001, Occurrence Investigation Techniques);
- f. conducting an appropriate investigation of the occurrence or requesting assistance;
- g. disposing of evidence only as authorized. When an FS investigation is convened, the RASO assigned to the occurrence is to abide by the recovery instructions from the IIC. Prior to the complete recovery/salvage of the aircraft, the RASO is to liaise with the appropriate DFS investigator (see also DAOD 4003-0, Environmental Stewardship);
- h. instituting or recommending measures to remedy each cause;
- i. observing the deadlines and routing of all reports by the unit of ownership; and
- j. disseminating information related to occurrences.

RESPONSE PROCEDURE FOR OTHER WINGS OR UNITS INVOLVED

11. On being notified of the occurrence or when so requested, any other wing or unit involved in an FS occurrence shall immediately carry out the following actions as appropriate:

- a. quarantine, impound and / or take samples from local items of evidence;
- b. identify witnesses of the occurrence, including:
 - (1) servicing and start crews;
 - (2) tower controllers; and
 - (3) anyone else with pertinent information;
- c. report the above actions by message to:
 - (1) the wing, base or unit of occurrence;
 - (2) the wing, base or unit of ownership; and
 - (3) CAS/DFS and 1 Cdn Air Div;
- d. assist investigators as required, e.g. providing administrative and logistic support, transportation and accommodation, as required;
- e. institute or recommend measures to remedy each cause of the occurrence that has been assigned as a responsibility of that unit; and
- f. disseminate information related to occurrences.

RESPONSE PROCEDURE BY DFS

12. The DFS occurrence response procedure includes:

- a. for occurrences involving non-CF aircraft, notifying the owners of the aircraft as required by NATO STANAG 3531, Letters of Agreement, or other standing arrangements, so that the actual owners of the aircraft may discharge their responsibilities;
- b. acting as FS advisor to test establishments, technical services agencies and their units;

- c. monitoring 1 Cdn Air Div, wing, base and unit actions;
- d. initiating and conducting DFS investigations;
- e. recommending special investigations when extraordinary circumstances prevail;
- f. reviewing and amending each cause factor as required;
- g. analyzing and recording PM;
- h. recommending and monitoring PM as necessary; and
- i. performing analysis, follow-up and dissemination of statistics and accident prevention information arising from occurrence reports.

RESPONSE PROCEDURE BY NDHQ

13. NDHQ agencies shall respond to occurrences by:
- a. providing specialist advice, facilities and special testing as required; and
 - b. implementing those PM that are beyond the capabilities of subordinate formations.

SPECIAL ASSISTANCE IN AIRCRAFT ACCIDENT INVESTIGATIONS

14. The unit of occurrence and unit of ownership must provide the DFS IIC with the assistance required to conduct the investigation. If special technical, medical or other assistance is required beyond that available at the unit of occurrence or unit of ownership, such assistance will be requested by DFS. Special assistance might be in the form of:

- a. airlifting personnel and equipment to and from the accident site;
- b. ground search parties;
- c. shelter and messing;
- d. detectors for locating vital aircraft parts;
- e. underwater recovery personnel and equipment;
- f. infrared scanning for aircraft wreckage location; and
- g. a receiver to detect the underwater acoustic beacon.

15. In addition, specially trained advisors may be approved by CAS or NDHQ to assist in salvage or analysis. In accordance with a letter of understanding between DFS and DRDC Toronto, DRDC Toronto will provide a human factors specialist for all A, B and C Category accident investigations. In addition, a DRDC Toronto Human Factor / Life Support Equipment member will be provided if requested for examination of non-ejection seat life support equipment. For ejection seat accidents, an AETE ejection specialist will normally be assigned to the investigation team (in accordance with MOU between AETE and DFS).

NOTE

In all cases, DFS must be advised of any such requirements in order to evaluate the benefits and arrange the support.

RECOVERY AND SALVAGE, COMMAND / CONTROL AND COMMUNICATIONS GUIDELINES

16. There are four basic accident scenarios for which different command, control and communications guidelines are applicable; the following directions shall apply:

a. On DND property:

- (1) The unit comd, through a designated representative, shall retain command of the emergency response until the DFS IIC arrives. Upon completion of all pertinent on-scene investigations, control shall revert to the unit comd's representative;
- (2) Duties IAW A-GA-135-001/AA-001 shall be carried out by the FSO or his/her representative(s);
- (3) The unit comd shall ensure the site is cordoned and secured. Access to the site is permitted only on the appropriate authority of the DFS IIC or the unit comd's representative during the pre- and post-investigation process;
- (4) The DFS IIC shall assume the responsibilities outlined in A-GA-135-001/AA-001 and, in cooperation with the unit RASO, shall determine the hazards that exist and the level of protection required;
- (5) The RASO assists the DFS IIC as required. The DFS IIC may direct that the wreckage be collected and relocated for further investigation;
- (6) Accident site communications equipment shall be used, within reason, to ensure communications security. All requests for information should be directed to the DFS IIC through the designated PAO; and
- (7) The unit comd is responsible for the coordination of all activities that support recovery actions, salvage and clean-up of the site. Such activities shall normally be coordinated through the Environmental Officer, who will ensure that all reasonable efforts are made to leave the site in a condition that will not pose any hazard to the public (see also DAOD 4003-0, Environmental Stewardship).

b. Off DND property:

- (1) The supporting unit shall liaise with local authorities, and shall ensure coordinated support that may require a designated representative to be on site. If local authorities are present, military Emergency Response shall assist as required;
- (2) Applicable duties IAW A-GA-135-001/AA-001 shall be carried out by the FSO or designated representative(s);
- (3) If the accident is in a remote area or military flying area, the supporting unit shall ensure site control until the DFS IIC arrives;
- (4) The DFS IIC, in cooperation with the supporting RASO, shall determine the hazards which exist and the level of protection required;
- (5) The supporting RASO assists the DFS IIC as required. The DFS IIC may direct that the wreckage be collected and relocated for further investigation;
- (6) Accident site communications equipment shall be used, within reason, so ensure communications security. All requests for information should be directed to the DFS IIC through the designated PAO; and

- (7) The supporting unit is responsible for coordinating all activities that support recovery actions, salvage, and clean-up of the site. Such activities shall normally be coordinated through the Environmental Officer, who will ensure that all reasonable efforts are made to leave the site in a condition that will not pose a hazard to the public.
- c. Submerged aircraft:
 - (1) Emergency Response and SAR shall be coordinated by the appropriate RCC. The supporting unit shall liaise with RCC and provide available support;
 - (2) Applicable duties IAW A-GA-135-001/AA-001 shall be carried out by the FSO or his/her representative(s);
 - (3) DFS shall coordinate any external military / civilian assistance beyond the capabilities of the supporting unit for site security and aircraft recovery and salvage. If non-Air Force assets are required, an NDCC Ops tasking will be issued;
 - (4) In cooperation with the supporting RASO, the DFS IIC shall provide the external agencies with technical advice, notification of possible hazardous material and the associated safety precautions;
 - (5) The DFS IIC may direct the collection and relocation of the wreckage by external military/civilian agencies for further investigation at another site;
 - (6) Accident site communications equipment shall be used, within reason to ensure communications security. All requests for information should be directed to the DFS IIC through the designated PAO; and
 - (7) The supporting unit, in cooperation with the external military/civilian agency, is responsible for the coordination of all activities that effect recovery actions, salvage and clean up of the site. Such activities shall normally be coordinated through the Environmental Officer who will ensure that all reasonable effort has been made to leave the site in a condition that will not pose any hazard to the public at large. If non-air force assets are required, a NDCC Ops tasking will be issued.
- d. Civilian airport:
 - (1) Local Emergency Response authorities shall be in charge according to existing MOUs and Working Agreements and the Aeronautics Act. The supporting unit shall liaise with local authorities. The Working Agreement in force with TSB shall govern the investigative agency that will lead any investigation;
 - (2) DFS shall coordinate any external military assistance beyond the capabilities of the supporting unit for aircraft recovery and salvage operations;
 - (3) In cooperation with the supporting RASO, DFS shall provide the external agencies with technical advice, notification of possible hazardous materials and the associated safety precautions;
 - (4) The supporting RASO assists the designated investigative agency as required; and
 - (5) Accident site communications equipment shall be used, within reason, to ensure communications security. All requests for information should be directed to DFS through the designated PAO.

FACILITIES AND EQUIPMENT NEEDED ON RETURN FROM AN ACCIDENT SITE

FACILITIES

17. The following facilities should be readily available so that investigators can compile their field reports:

- a. a large secure room to which investigators may have 24-hour access;
- b. a telephone (preferably a dedicated line);
- c. competent administrative assistance with applicable security clearance;
- d. a white or blackboard, markers, chalk and eraser; and
- e. at least five large tables or desks for examining evidence and laying out the report during assembly.

REFERENCE MATERIALS

18. The following references should be available:

- a. QR&Os, DAODs and CFAOs;
- b. B-GA-100-001/AA-001, CF Flying Orders;
- c. 1 Cdn Air Div Orders;
- d. local orders and instructions; and
- e. complete CFTO series for the aircraft concerned.

REPORT COMPILATION MATERIALS

19. The following materials should be available:

- a. forms for FS Investigation Report, Ditching Report, and Emergency Escape from Aircraft Report (held by DFS);
- b. a personal computer with Microsoft Word application; and
- c. hard covers, fasteners and labels.

20. The supporting unit, in cooperation with the unit of ownership, is responsible for coordinating the activities that affect recovery and salvage operations and the clean-up of the site. Such activities shall normally be coordinated through local authorities and the Environmental Officer, who will ensure that all reasonable efforts are made to leave the site in a condition that will not pose a hazard to the public.

Annex C
Chapter 8
A-GA-135-001/AA-001

ANNEX C – ACCIDENT INVESTIGATION KITS

HAND-PORTABLE ITEMS

1. The following items should be prepared for immediate issue and easy transportation.
 - a. Publications;
 - b. Survey Equipment;
 - c. Tools and Sampling Materials; and
 - d. Photographic Equipment.

PUBLICATIONS

2. The following publications should be available:
 - a. A-GA-135-001/AA-001 and A-GA-135-002/AA-001;
 - b. photocopies or excerpts from frequently used CFAOs, DAODs and QR&Os (see Annex D to Chapter 9 for listing of publications);
 - c. CFTOs for unit aircraft;
 - d. the unit telephone directory and a list of local civilian authorities' addresses and telephone numbers;
 - e. notes for the Conduct of Investigations Into Aircraft Accidents, B-GA-015-003/FP-001;
 - f. FS investigation handbooks for the technical and aircrew members; and
 - g. Human Factors Guide for the Conduct of Aircraft Accident Investigation, B-GA-015-001/FP-001.

SURVEY EQUIPMENT

3. The following equipment may be used:
 - a. maps of the area (1:50,000);
 - b. 1,000 feet of light rope or heavy cord, marked at 50-foot intervals;
 - c. a 50-foot tape measure;
 - d. a 12-inch steel ruler;
 - e. a magnetic compass and / or a GPS;
 - f. 50 lightweight stakes;
 - g. a small box of accident investigation tie-on tags (Form CF 219);
 - h. a small pad of accident investigation adhesive tags (similar to the above, but with no catalogue number);
 - i. a knife;
 - j. a hatchet;

- k. a small shovel;
- l. magnifying glasses (5X and 10X);
- m. spray lubricant;
- n. rags;
- o. small stiff and soft-bristled brushes;
- p. an aircraft fluids sampling kit (NSN 8115-21-886-4126, available through QETE);
- q. three siphons of various sizes;
- r. plastic bags (assorted), non-static bags for permanent memory chips;
- s. carbon fibre ash stabilizer kit including:
 - (1) paper coveralls (various sizes),
 - (2) disposable latex gloves,
 - (3) liquid floor wax,
 - (4) manual spray pumper, and
 - (5) dust masks;
- t. masking and duct tape;
- u. work gloves;
- v. packaged wash cloths;
- w. hand cleanser;
- x. paper towels; and
- y. an inspection mirror.

TOOLS AND SAMPLING MATERIALS

- 4. The following tools and sampling materials should be available:
 - a. wrenches (adjustable);
 - b. pliers and wire-cutters (assorted);
 - c. screwdrivers (several, including Philips);
 - d. flashlight (with spare bulb and batteries);
 - e. hammer, chisel and small portable cutting torch;
 - f. small magnet and string;
 - g. hacksaw with spare blades;
 - h. small wood saw; and
 - i. knife.

PHOTOGRAPHIC EQUIPMENT

5. Still cameras (traditional 35 mm with colour film, or digital) and video cameras may be used. Ideally the digital camera shall be a 5 megapixel camera with minimum 3X optical zoom with 2 GB of storage capacity.

SURVEY EQUIPMENT KIT

6. The survey kit shall contain the following:
- a. a small first-aid kit;
 - b. pens, pencils, grease pencils and chalk;
 - c. two clipboards;
 - d. notebooks, graph paper and scratch pads;
 - e. voice recording devices and batteries; and
 - f. scale model(s) of unit aircraft.

CONTINGENCY ITEMS

7. The following items are needed only under certain conditions. Notwithstanding the above, all FSOs of frequently deployed units and all Base FSOs must have the items that are scaled on L-49-070-021/LC-092 in their kits and ready for use at all times. Also, all FSOs must arrange to have the following items available for issue to investigators when required, remembering also to provide for necessary transportation of the items to the accident site:

- a. health protection kit (see Annex A Appendix 1);
- b. tents, bedding, rations and cooking gear;
- c. coveralls, boots, parkas and rain suits;
- d. emergency funds, including foreign currency if applicable;
- e. axes, machetes, chain saws, floodlights and other heavy equipment;
- f. assorted sieves (up to 3 feet square) to sift mud for evidence;
- g. portable lightweight means of on-site communication, e.g., field telephones, portable radio sets or loudhailers, and spare batteries;
- h. protective packing materials, containers and string for shipping evidence from the site;
- i. voice recording devices and batteries;
- j. a CPI receiver (normally available at SAR units and at the home bases of CPI-fitted aircraft); and
- k. an underwater acoustic beacon receiver (held by SAR units).

CHAPTER 9 – INVESTIGATIONS

References: A. CFAO 24-1

B. CFACM 2-350, Emergency Response Planning

C. A-GA-135-003/AG-001, Airworthiness Investigator Manual

INTRODUCTION

1. FS occurrences result in or have the potential to cause the loss of aviation resources. It is therefore important to investigate appropriate occurrences with the objective of quickly identifying effective PM that will either prevent or reduce the risk of a similar occurrence. The AIA has been delegated the responsibility to independently investigate matters of aviation safety concern and has delineated the policy by which this activity is conducted in the AIM. All FS investigation activities are also airworthiness investigations and they are carried out on behalf of the AIA. This chapter outlines the authorities for investigations, the occurrence classification system, the investigation classification system and the types of FS investigations done by DND / CF.

DEFINITIONS

AIRCRAFT DAMAGE

2. Damage is defined as physical harm to an aircraft that impairs the value or normal function of that aircraft. Damage is said to have occurred when the aircraft or any portion of it is lost or requires repair or replacement as a result of unusual forces like a collision, impact, explosion, fire, rupture, or overstress. Damage does not include faults that progressively develop from repeated applications of load at or below the design operating limits of the aircraft as a result of normal flight stresses. Additional damage resulting from stress failures may be classified appropriately as damage. Routine system or component unserviceabilities are not considered to be damage, and need not be reported unless the originator feels that there was injury or damage potential.

NOTE

If the equipment has not been misused or subjected to unusual stress failures, it shall not be classed as damage, but as normal wear resulting from prolonged service use.

AIRCRAFT MAJOR COMPONENTS

3. Aircraft major components are:

a. Fixed wing:

- (1) the fuselage, cargo ramp and major structural sections thereof, but does not include canopies, jettisonable stores, windows, astrodomes, antennae, radomes, MAD booms, aerodynamic braking devices, small non-structural panels, doors or hatches, and non-integral nacelles,
- (2) the wings and major structural sections thereof, but not including the wing-tips, non-integral nacelles, spoilers, flaps, ailerons or other control-of-lift devices, and
- (3) the empennage and major structural sections thereof (vertical stabilizer, horizontal stabilizer, and stabilator), but not including the rudder or elevator;

- b. Rotary wing:
- (1) the fuselage, cargo ramp and major structural sections thereof, but does not include, windows, astrodomes, antennae, radomes, small non-structural panels, doors or hatches, and non-integral nacelles,
 - (2) the main rotor and tail rotor blades system, main transmission, and gearboxes but not including the drive shafts,
 - (3) the helicopter tail boom and pylon, but not including the fairings, non-integral vertical or horizontal stabilizers or synchronized elevators, and
 - (4) the landing-gear oleos, legs, struts, sponsons and similar weight-supporting members and structures, but not including the tail wheel strut or support assemblies, wheels, floats, shoes, skis, helicopter cross-tubes or skids, non-integral removable axles, brakes, tires, gear doors or actuating rods; and
- c. UAV major components. UAV major components will be defined on a case-by-case basis as determined by individual UAV type and consultation with DFS.

NOTE

Powerplants are NOT considered to be major components for the purposes of determining the Aircraft Damage Level.

INVESTIGATOR IN CHARGE (IIC)

4. The IIC will be a qualified, trained and certified accident investigator appointed by the AIA or through authorized delegation by the 1 Div FSO. The IIC conducts all airworthiness investigation activities on behalf of the AIA. All activities of personnel involved in the investigation are to be coordinated through the IIC

FS INVESTIGATION

5. A flight safety investigation (FSI) refers to any investigation conducted under the terms of this publication and the AIM for the sole purpose of occurrence prevention. These investigations are also referred to as airworthiness investigations and fulfil the investigation requirement of the CF / DND Airworthiness Program.

FS INVESTIGATION REPORT

6. The report produced in support for a Class I or most Class II FSI into the circumstances of a particular FS occurrence, and subsequently commented upon by various levels of command and the PDIs is titled a FSI Report (FSIR).

POWER PLANT

7. The power plant includes the engine, engine-driven components and related systems, including propellers, afterburners, fans and the like.

PERSONS WITH A DIRECT INTEREST (PDI)

8. A PDI is a person, in the opinion of DFS, whose behaviour or the performance of whose products or organization may be commented on in the report and whose rights or reputation, or his/her product reputation may be adversely affected by the report. Typically, PDI status is given to crew members, the CO, Comd 1 Cdn Air Div and contractors directly involved in the operation maintenance or manufacturing of the aircraft.

NEED TO INVESTIGATE

9. FS occurrences result in or have the potential to cause a loss of resources. Therefore, any occurrence that could lead to the identification of causes and determine effective PM will be investigated. This chapter describes the tasking authorities and necessary protocols for the conduct of FSIs.

AUTHORITY TO INVESTIGATE

10. The *Aeronautics Act*, the A-GA135-001/AA-001, Flight Safety for the CF, and the delegations and authorizations as outlined in the A-GA-136-003/AG-001 Airworthiness Investigator Manual provide the authority to investigate FS occurrences. These documents define terminology, responsibilities and procedures for investigation. The A-GA135-002/AA-001 also provides guidance for terminology and prescribes procedures specific to investigative techniques.

FSI CONVENING AUTHORITY

11. DFS / AIA is the convening authority for Class I and Class II investigations. The convening authority for a Class III and IV investigations is delegated by the AIA to the WFSO.

INVESTIGATION RESPONSIBILITIES

DEPARTMENTAL RESPONSIBILITIES

12. The MND has designated DFS as the Airworthiness Investigative Authority for the CF / DND. The AIA is responsible to independently investigate all matters of aviation safety concern, an MND requirement based in the *Aeronautics Act* and a coincidental requirement of both the Airworthiness Program and the FS Program. Consequently, DFS / AIA shall ensure that occurrences as defined in this document are documented and investigated as required. In principle, the completion of a Combined Report or a Supplementary Report constitutes in itself an investigation, although it may consist of the simple gathering of facts as done for occurrences labelled as Repetitive Occurrences (ROs).

COMMAND RESPONSIBILITIES

13. The unit CO shall ensure that all FSIs affecting aircraft under unit control are investigated; however, all investigation activities are undertaken on behalf of the AIA as delineated in the AIM. If an investigation is impractical for the unit of ownership to investigate, the WComd / Comd 1 Cdn Air Div and DFS shall be advised.

OCCURRENCE CATEGORY

14. FS occurrences are categorized according to the overall seriousness of the occurrence.

15. The occurrence category is an alphabetical designation assigning an overall seriousness classification to an occurrence.

- a. aircraft damage level (ADL); or
- b. personnel casualty level (PCL).

16. Occurrence categories range from A to E for both air and ground occurrences, with A being the most serious and E identifying situations where, although no damage occurred, the potential for damage or injury existed. Annex A details the Occurrence Category to be assigned to an occurrence based on the ADL and PCL.

AIRCRAFT DAMAGE LEVEL

17. The ADL is a qualitative categorization system used to determine the level of damage sustained by an aircraft during an occurrence. The following damage level definitions are used to reflect the degree of damage:

- a. Destroyed / missing: The aircraft has been totally destroyed, is assessed as having suffered damage beyond economical repair or is declared missing.

NOTE

Aircraft totally destroyed are normally written off the inventory. Accidents with a lower ADL may subsequently result in administrative write-off of the aircraft for reasons not directly related to the damage. The original ADL will be recorded in the FSOMS for statistical purposes.

- b. Very serious: The aircraft has sustained damage to multiple major components requiring third-line maintenance.
- c. Serious: The aircraft has sustained damage to a major component requiring third-line maintenance.

NOTE

For very serious or serious damage levels, third-line maintenance is considered applicable if the damaged component is shipped to a contractor or a third-line facility for repair, the repair is carried out in part or in full by a mobile repair party from a contractor or third-line facility dispatched specifically for that purpose, or the repair is carried out by a third-line maintenance capability integral to a military unit.

NOTE

When a fuselage, wing, helicopter drive train or rotor blade are damaged beyond economical repair or are shipped to a repair facility, the level of damage will be referred to DFS for categorization (e.g. rotor blade change is minor damage, multiple blade changes is serious damage, transmission overspeed requiring overhaul is minor damage, sudden stoppage requiring complete change of drive train is serious damage).

- d. Minor: The aircraft has sustained damage to non-major components requiring normal second-line maintenance repair.
- e. Nil: The aircraft, including the power plant, has not been damaged.

NOTE

When there are unique contractual maintenance arrangements in place that preclude CF personnel from performing repairs that are considered within second-line maintenance, the case will be referred to DFS, who will assign the ADL.

PERSONNEL CASUALTY LEVEL

18. The PCL is a colour-based categorization system used to identify the most severe casualty suffered by personnel in an FS occurrence. The PCL is determined by a medical officer in accordance with CFAO 24-1. The PCL assigned for an occurrence is defined as follows:

- a. BLACK. BLACK is the PCL level assigned when a fatality has occurred;
- b. GREY. GREY is the PCL level assigned when personnel is missing;
- c. RED. RED is the PCL level assigned when personnel is very seriously injured or ill and the person's life is in immediate danger;
- d. YELLOW. YELLOW is the PCL level assigned when when personnel is seriously injured or ill. There is cause for immediate concern but the patient's life is not in immediate danger. Usually the person is non-ambulatory; and
- e. GREEN. GREEN is the PCL level assigned when personnel are moderately injured or ill in an occurrence for which medical attention is needed but there is no immediate concern. Usually the person is ambulatory.

NOTE

FS reports shall only provide PCL information. No other medical information or details shall be circulated on the FS net or entered in FSOMS.

CLASS OF INVESTIGATION

CRITERIA FOR ASSESSING FSI CLASS

19. In order to assign investigations to the appropriate authority, an occurrence investigation classification system is used. The purpose of classifying FSIs is to determine the amount of time and resources that will be devoted to the investigation. The type of investigation into an occurrence and the level of effort will be determined by an assessment of the following three criteria:

- a. the occurrence category;
- b. the safety of flight compromise level; and
- c. other factors which could impact on the reputation of the FS Program, the Airworthiness Program, the CF and the Department.

20. FSIs will be classified I to IV based on the above criteria. Annex B shows the Class of investigation assigned based on these criteria.

SAFETY OF FLIGHT COMPROMISE LEVEL FACTOR

21. The SFCL is categorized with a qualifier that describes the level to which safety margins were compromised during an occurrence. By extension, it provides an indication of how much the crew and / or aircraft were put at risk.

- a. Extreme: an occurrence where the outcome of the occurrence has been or could have been catastrophic and might have resulted in the loss of life or the aircraft;
- b. High: an occurrence where the outcome of the occurrence has resulted or could have resulted in very serious injury or very serious damage to the aircraft;
- c. Medium: an occurrence where the outcome of the occurrence has resulted or could have resulted in serious injury or serious damage to the aircraft; and
- d. Low: an occurrence where the outcome of the occurrence has resulted or could have resulted in minor injury or minor damage to the aircraft.

OTHER AGGRAVATING FACTORS

22. There are other factors that may elevate the level at which an occurrence is investigated. If a higher level of investigation might lead to a more effective reduction of risk to persons, property or the environment then this level should be assigned. Consideration shall also be given to maintaining the trust of CF personnel and the general public in the FS Program and the CF by having occurrences investigated at the appropriate level.

RELATIONSHIP BETWEEN INVESTIGATION CLASS AND INVESTIGATION TYPE

23. Each FSI Class requires the production of a report format as follows:

- a. Class I: FSIR;
- b. Class II: ESR;
- c. Class III: SR; and
- d. Class IV: CR or SR.

TASKING FOR CONDUCT OF INVESTIGATIONS

24. DFS / AIA conducts all Class I and Class II investigations. All other investigations are conducted by unit FSO on behalf of DFS / AIA and are released by the supporting wing FSO (IIC). Some occurrences are repetitive in nature and limited benefit would be gained by carrying out a full-scale investigation.

REPETITIVE OCCURRENCES

DEFINITION OF REPETITIVE OCCURRENCE (RO)

25. A RO is defined as a recurring type of FS incident where the event and investigation results are consistent with a previous investigation. The use of an RO is limited to a SR or a CR.

26. Typical ROs are the Cormorant tail rotor half-hub cracks, bird strikes with little to no damage and the Griffon chip light detectors occurrences. Given the repetitive nature of these incidents and the limited potential to find new causes and original PM, a rudimentary investigation is still required to ascertain the facts and confirm the occurrence is similar in all aspects.

RO CONDITIONS

27. To qualify as an RO, an occurrence must meet the following conditions:

- a. the personnel involved has suffered no injury;
- b. the aircraft has sustained only minor or no damage;
- c. the PM and cause factor(s) for the investigated occurrence is/are in line with a reference occurrence; and
- d. the FS risk and aggravating factors, if any, are in line with the reference occurrence which will serve as the initial RO.

RO STAFFING, APPROVAL AND MONITORING

28. Any occurrence which will be treated as an RO must refer to an original FSOMS reference ID # for which a detailed investigation was completed. It will use the same key words, cause factor(s) and PM(s) of the reference RO.

29. The 1 Div FSO staff monitors the occurrences reported by different wings and is the approving authority to accept a type of occurrences as an RO. If it is determined that a certain type of occurrences should be treated as a RO, the FSO or WFSO shall submit a request to the Div FSO for approval and

inclusion on the RO master list. The suitability of the RO designation will be evaluated by the 1 Div FSO staff and approved, as applicable. The WFSOs and FSOs of affected units will be informed of the newly approved RO. The approved RO list will then be updated by the 1 Div FSO staff and posted on the FS Intranet site.

30. By keeping track of ROs, DFS can initiate more detailed analysis if some concerns are identified or as required. The RO list shall be reviewed annually for suitability by the FSOMS WG and briefed as an agenda item at the DFS annual seminar.

INVESTIGATIONS FOR TRACKING PURPOSE ONLY

31. If it is assessed by the investigative unit that a Class IV investigation will not lead to the production of significant cause factors and valuable PMs, the investigative officer will ascertain the facts in FSOMS so it can be tracked for future analysis and tracking purpose (FTPO) and make recommendation to the WFSO as follows:

- a. Cause factor: Nil (FTPO); and
- b. PM: Nil (FTPO).

FSI TEAM SELECTION

32. FSI team personnel are tasked by the appropriate FS tasking authority, the AIA. The selection of the IIC and FSI team members for Class I, II and Class III ESRs occurrences is determined by DFS / AIA.

33. DFS / AIA may, with the concurrence of the CoC, task a non-DFS IIC to conduct a Class II investigation.

INVESTIGATOR-IN-CHARGE

34. All FS investigations will have an IIC. This is normally the WFSO (typically holding an IIC 3 qualification) for Class III or IV investigations. The IIC for Class I or II investigations should be a DFS accident investigator currently employed at DFS (typically holding IIC 2 or IIC 1 qualifications). In unusual circumstances, DFS may appoint another trained investigator who is not currently employed at DFS. Anyone tasked to conduct an FSI shall be excused from all other duties until released from the investigation by DFS. The IIC reports to DFS / AIA for the conduct of the investigation.

35. The IIC has the authority to quarantine and impound evidence, interview witnesses and examine documents and equipment related in the occurrence. The IIC also has certain delegated authorizations from the AIA for activities associated with investigations as outlined in the AIM. Detailed process guidance for the investigation is promulgated in A-GA135-002/AA-001.

36. The mandate of the IIC is to conduct an investigation of the occurrence, gather factual information and conclude with findings and recommendations and submit a report on the FSI in the mandated format. The AIA's policy on investigator behaviour, interaction with personnel, other authorities and agencies, intra-team protocols, and other investigation requirements are contained in the AIM. While deployed for this effort, the IIC shall remit daily SITREPs as per Annex C to DFS / AIA. For ESRs, the IIC will liaise through an appointed DFS desk officer.

MEMBERS AND ADVISORS

37. Personnel assigned to an FSI team are tasked by DFS / AIA and will report to the IIC until released from duty by DFS / AIA. Unless there is no reasonable alternative, a team member should

not be selected from the unit of occurrence. The circumstances of the occurrence will dictate the team complement best suited to investigate considerations such as human factors, technical issues, recovery and salvage support and medical issues. In addition, advisors such as meteorologists, other aircrew, air traffic controllers and paratroop officers should be appointed when the need arises. Specialist advisors not specifically assigned to the FSI team in the tasking order may be required to assist in the investigation. These individuals will be appointed with an observer status and will normally have limited access to information not related to their field of expertise. At the discretion of the IIC and provided an undertaking is signed to treat the information related to the investigation as privileged, they could be integrated fully into the investigation team.

MINIMUM FSI TEAM COMPLEMENT

38. The FSI team tasked by DFS / AIA will ideally comprise:
- IIC. This person is a qualified and certified investigator who is authorized by the AIA to conduct the investigation and is familiar with the aircraft type and role;
 - Aircrew member. This person is a subject matter expert who is qualified and current on the aircraft type involved in the occurrence;
 - Technical member. This person is the DFS AERE Officer or an AERE officer familiar with the aircraft type;
 - Medical member. This person is the DFS Flight Surgeon or a military physician, ideally a flight surgeon;
 - Specialist advisors. Advisors will be appointed as required; and
 - Observers. Observers will be appointed as required.

TYPES OF OCCURRENCE REPORTS

39. There are several types of FS occurrence reports that may need to be completed depending on the Class of investigation carried out:
- Initial Report (IR);
 - Supplementary Report (SR);
 - Combined Report (CR);
 - Enhanced SR (ESR); and
 - FSIR.

INITIAL REPORT (IR)

40. The IR describes the immediately available particulars of the occurrence and must be sent within 12 hours of the event. It is generally reported through FSOMS. If the user is unable to access the application, occurrence details shall be sent to the designated wing for input into the database. Annex E lists the information that must be submitted in the IR. An IR form can be downloaded from the DFS websites.

NOTE

When and if applicable, the IR should include whether “quarantining was undertaken” (e.g. quarantining of aircraft and aircraft oxygen system, aircrew ALSE, LOX trailer, LOX storage tank), so that those reviewing the FSOMS entry know right away that this important airworthiness investigation step was not omitted or overlooked.

SUPPLEMENTARY REPORT (SR)

41. The SR is the report normally produced by the wing or unit for aircraft incidents of category D and E. It shall be submitted within 30 calendar days of the occurrence. The report requirements are shown in Annex F.

COMBINED REPORT (CR)

42. The CR is the combination of the IR and SR in a single report submitted for minor occurrences requiring limited or cursory investigation, provided it can be released within 48 hrs of the occurrence. The report format is the same as the SR.

ENHANCED SR (ESR)

43. The ESR is to be used for occurrences that are sufficiently complex to warrant a more thorough investigation than a normal SR, but do not require the same degree of scrutiny that is required for an FS Investigation Report (FSIR). The reporting requirements are the same as for the SR except that the investigation paragraph will be more detailed. DFS is the tasking and releasing authority for ESRs.

FS INVESTIGATION REPORT (FSIR)

44. The FSIR is a comprehensive report on an FS occurrence and all related aspects, so the reviewing authorities have detailed information on which to base recommended PM. The report follows the ICAO accident report format. DFS is the tasking and releasing authority for FSIRs. The FSIR requirements are available on the DFS website.

45. FSIRs shall normally be unclassified and be released to the public via the DFS Internet site and internally to the Department on the Intranet site.

DOCUMENTATION LEADING TO PRODUCTION OF FSIR

46. In the process of staffing a FSIR the IIC will have to submit different documents which will include:

- a. Preliminary FSIR;
- b. *From the investigator;*
- c. Draft FSIR;
- d. Final FSIR; and
- e. *Epilogue.*

PRELIMINARY FSIR

47. The purpose of the Preliminary FSIR is to provide senior management with factual information pertinent to the occurrence and provide immediate PM recommendations where appropriate. The Preliminary FSIR shall include Part 1, Factual Information, and Part 4, Safety Recommendations of the FSIR. One blank page for each of Part 2 and Part 3 shall be included for completeness. In the interest of expediency, the report may be produced in one language only (normally English unless the addressee is a French language unit (FLU)).

FROM THE INVESTIGATOR (FTI)

48. The FTI summarizes information contained in the preliminary report. It shall describe factual information, immediate safety actions taken and the focus of the ongoing investigation. The FTI will be published in bilingual format on the DFS website and in "Flight Comment." The complete document will not normally be longer than two pages.

FSIR DRAFT FOR COMMENT

49. The purpose of the FSIR Draft for Comment is to confirm the accuracy and completeness of the report. The FSIR Draft for Comment will be distributed directly to all PDIs, and PDI comments will be returned directly to DFS. The FSIR Draft for Comment will capture factual information, analysis, findings and PM pertaining to the occurrence. The purpose of the direct response is to ensure privileged information is protected as required by the *CTAISB Act*.

FINAL FSIR

50. The final report is titled FSIR. It is a comprehensive report on an FS occurrence and all related aspects to provide reviewing authorities with detailed information on which to base recommended PM. The report follows the ICAO accident report format. DFS will be the tasking and releasing authority for the report. The report requirements are available on the DFS website. The Final FSIR will include valid PDI input from the Draft for Comment process. The report will be produced in both official languages.

51. FSIRs shall normally be unclassified and be released to the public via the DFS Internet site and internally on the DND Intranet site.

EPILOGUE

52. The *Epilogue* summarizes the information contained in the Final Report. The Epilogue will be published in bilingual format on the DFS website and in Flight Comment.

REPORT FORMAT

53. In the course of investigating an FS occurrence, the IIC shall be responsible for staffing a Preliminary FSIR, a Draft FSIR for Comment and a Final FSIR. All three reports will adhere to the same format and each successive report will be a more detailed or refined iteration of the previous report. Although formally addressed in the Preliminary and Final Report, safety recommendations will be promulgated by the IIC whenever the investigation discovers a deficiency that requires immediate action from the chain of command.

54. Investigations of aircraft accidents and serious incidents are promulgated by means of the FSIR format. The FSIR closely parallels the internationally accepted ICAO format. The Final Report is released to the public and the authority of the DFS. The report contains four sections:

- a. facts;
- b. analysis;
- c. conclusions; and
- d. PM.

REPORT DEADLINES

55. Report deadlines shall be met unless there are extenuating circumstances and an extension is authorized by DFS / DFS 2. All times are not-later-than times referenced from the date of occurrence. Table 3 provides the timelines for each report type.

REPORT TYPE	TIMELINE
Preliminary FSIR	4 weeks
FTI	5 weeks
Draft FSIR	7 months
Final FSIR	12 months
Epilogue	12 months

Table 3 – Report timelines**HANDLING OF COMMENTS FROM PDI**

56. Since the chain of command is routinely involved in post-occurrence PM, superior officers may well benefit from or contribute to inputs submitted by PDIs at subordinate levels. If a PDI wishes the chain of command to be given access to their representations, they may indicate this by signing a waiver and identifying those individuals (or levels of command) that they believe should have access to their input. DFS will then distribute accordingly.

57. When an input from a PDI is released to the chain of command, the input remains privileged. It needs to be treated as such and circulated on a need to know basis only. It may only be used for accident prevention purposes. The principle of protection of representations, as espoused in the *CTAISB Act*, shall be overriding and, where doubt exists regarding further dissemination, DFS must be consulted.

FOLLOW-UP ON PROPOSED PM

58. DFS will forward the Final FSIR to CAS, who will subsequently distribute it to the OAA and TAA, as applicable, to allow them the opportunity to review and provide input into the proposed PM. They will have access to the PDI comments for which a waiver has been signed, in accordance with Paras 52 and 53 above. Should the OAA or TAA determine that a recommendation in the FSIR is not feasible, they shall advise the Airworthiness Authority in writing of their decision and the rationale for it. It is highly desirable that the decision not to implement a recommendation be accompanied by a formal risk assessment.

59. OAA and TAA shall submit any comment and input into the proposed PM (including risk assessments) to CAS within 21 days following receipt of the Final FSIR. The AA will consider the input from the OAA and TAA during the formulation of the final action directive.

60. Once the action letter has been released by CAS, DFS will send a letter to each PDI outlining the DFS position on their representations. The cover letter shall clearly indicate if the PDI comments were incorporated in the FSIR and the rationale for the DFS decision in this regard.

61. Chapter 11 of this publication describes the generic handling and follow-up of PM. Chapter 2 of the AIM details the principles of airworthiness investigations and articulate the processes for the follow-up of PM stemming from airworthiness investigations.

USE AND HANDLING OF FS REPORTS

62. Reports prepared under the authority of this publication are considered by the CF to be sensitive documents and, unless specifically authorized, these reports and their attachments shall not be used

for any purpose other than FS. The special treatment accorded these reports is of vital importance in obtaining complete cooperation from witnesses and in determining the real cause(s) of an occurrence. Authorization for other uses shall only be granted with the express concurrence of DFS / AIA. Examples of agencies who might have access to FS information are as follows:

- a. a coroner requests access for the purposes of a coroner's investigation; and
- b. an individual is conducting a coordinated investigation under the provisions of one or more signed agreements (a STANAG or an MOU with TSB).

PROTECTION OF INFORMATION IN FS REPORTS

63. The concept of classifying information given during an FS investigation as privileged encourages a frank and open reporting culture. This helps to determine the cause(s) quickly and to develop the most appropriate PM. It must be noted that FS reports may be accessed through the *Access to Information Act*. Nevertheless, the contents of the reports are eligible for protection under the *CTAISB Act*, *Access to Information Act* and *Privacy Act*.

64. It is the policy of DND that some investigation reports will be made available to the public in order to facilitate accident prevention throughout the aviation community. They are released under the authority of the DFS / AIA pursuant to the powers delegated to him / her by the MND as the Airworthiness Investigative Authority of the CF, with the understanding that the reports will be used for no other purposes than accident prevention.

RECONVENING AN FSI

65. An investigation shall be re-opened by DFS or the delegated FSO without delay if it appears that some evidence was not considered or was omitted; if a relevant aspect was not covered adequately; or new evidence has been uncovered, and this evidence would lead to a PM which has not already been recommended. Such action should not be taken unless absolutely essential.

RELATIONSHIP BETWEEN FSI AND BOARD OF INQUIRY

66. The effectiveness of the FS Program is reliant on open, honest and timely reporting of occurrences by individuals without fear of retribution. When required, the CF may be required to convene a collateral investigation concurrent with or in addition to a FS investigation for the purposes of determining administrative or disciplinary disposition. In order to preserve the fundamental principles of the FS Program, FSOs shall not be appointed to or participate in collateral investigations. Information gained by FSOs through the conduct of a FS investigation shall only be provided to a collateral investigation on the authority of DFS.

67. When an aircraft accident occurs, a separate Board of inquiry may be convened in accordance with QR&Os. The requirement to conduct a Board of inquiry might be for a variety of reasons such as Investigation of Claim By or Against the Crown; QR&O 21.46, Investigation of Injury or Death; or to support COMSEC, administrative or disciplinary actions. This collateral investigation shall be independent of the FS investigation into the same occurrence. Privileged information (as defined in sections 28–30 of the *CTAISB Act*) which is gathered during the course of the FSI shall not be made available to the Board of inquiry President. However, all the factual information and a statement of cause, if available, will be made available upon request.

NOTE

Anyone who in the course of their FS investigation becomes aware of circumstances that require a collateral investigation is to advise the commanding officer or commander immediately. The FSO will only suggest the requirement of a collateral investigation and shall not give evidence as to what circumstances brought them to that determination. The chain of command, after having concluded there is a requirement of a collateral investigation, should act promptly to initiate the process in order to avoid the impression that information gained through the FSI precipitated the collateral action.

COORDINATED INVESTIGATIONS

68. Within Canada, TSB is responsible for investigating all aviation occurrences involving aircraft other than military conveyance aircraft or facilities. DND has the responsibility for investigating all occurrences involving military conveyance aircraft or facilities. The *CTAISB Act* defines a military conveyance aircraft as one being operated by or on behalf of DND, CF or a visiting force.

69. When the occurrence involves both civilian and military aircraft and / or facilities, the work of civilian and military investigators will be coordinated and will be governed by a DND / TSB Working Agreement developed for that purpose. The DND investigation will be conducted under the authority of section 4.2 of the *Aeronautics Act*, the *CTAISB Act*, the DND / TSB Working Agreement and in accordance with this publication. The TSB investigation will be conducted under the authority of the *CTAISB Act* and in accordance with the DND / TSB Working Agreement. Coordinated investigations with other military forces will normally be conducted within the procedures contained in ICAO Annex 13 for investigations involving non-NATO foreign military aircraft, and in STANAG 3531 for investigations involving NATO nations.

ACCESS TO INFORMATION REQUESTS

70. The *Access to Information Act* (ATIA) provides broad and effective legal access to information generated by government employees and information about government employees. With respect to FS investigations in general, and more specifically aviation accident / incident investigations, the ATIA, the *Privacy Act*, the *Aeronautics Act* and the *CTAISB Act* provide some protection for information obtained through investigations. Provisions for protection of privileged information is fully protected from release through the *ATI Act*. WFSOs are not expected to be current with the provisions of the various statutes mentioned above nor are they expected to handle FS ATI requests. All requests for FS information should be immediately routed through the designated ATI officer for the wing and handled according to the provisions stipulated in Chapter 6 of the AIM and applicable annexes. If that officer is not aware of the protections afforded by the various laws, they should be cautioned and advised to contact DFS (JAG) for legal advice.

Annex B
Chapter 9
A-GA-135-001/AA-001

ANNEX B – FLIGHT SAFETY INVESTIGATION CLASS TABLE

This table serves as a guide only. DFS reserves the right to determine the Class of investigation to be done on any category of occurrence. DFS is the tasking authority for Class I and II investigations. Further, DFS shall be contacted as soon as possible for any accident (Occurrence category ‘A’ to ‘C’) and /or for any occurrence having a SFCL equal or greater than High.

FACTORS			INVESTIGATION		
OCCURRENCE CATEGORY	SFCL	OTHER AGGRAVATING FACTORS	INV CLASS	AGENCY	RECOMMENDED REPORT TYPE
A, B	Extreme to High	Extreme to High	I	DFS	FSIR
C	Medium	Medium	II	DFS or WFSO	ESR
D, E	Medium	Medium	III	WFSO or UFSO	SR
E	Low	Low	IV	UFSO	SR or CR

Occurrence category: The occurrence category is based on the combination of the ADL and PCL as per the Occurrence Category Table at Annex A.

Safety of flight compromise level: The SFCL indicates the actual level of risk experienced by the personnel and / or aircraft during an occurrence or the potential SFCL.

Other aggravating factors: There are other factors that may elevate the level at which an occurrence is investigated. If a higher level of investigation might lead to a more effective reduction of risk to persons, property or the environment then this level should be assigned. Consideration shall also be given to maintaining the trust of CF personnel, the trust of the general public in the FS Program and in the CF by having occurrences investigated at the appropriate level.

Annex D
Chapter 9
A-GA-135-001/AA-001

ANNEX D – REFERENCE DOCUMENTATION

- *Aeronautics Act*
- *Canadian Transportation Accident Investigation and Safety Board Act*
- QR&O 21.47, Findings of Injury or Death
- QR&O 21.56-57, Aircraft Accidents
- QR&O 24.20, Post-mortem Examination
- CFAO 24-6, Investigation of Injuries or Death – Coroner's Inquest
- CFAO 59-3, Claims By or Against the Crown
- CFAO 210-1, Civilian Witnesses – Fees and Expenses
- CFMO 42-03-04, Medical Investigation and Reporting of Aircraft Accidents/Aeromedical Incidents
- B-MD-007-000/AF-003, CF Flight Surgeons' Guidelines for FS Investigation
- B-GA-015-001/FP-001, Human Factors Guide for the Conduct of Aircraft Accident Investigation
- CFTO C-05-010-002/AG-000, Aircraft Salvage Procedures
- CFTO C-02-015-001/AG-000, Unsatisfactory Condition Report – CF 777
- STANAG 3318, Medical Aspects of Aircraft Accident /Incident Investigation
- STANAG 3531, Investigation of Aircraft/Missile Accidents/Incidents

NOTE

Users of this publication who have a requirement to be familiar with STANAG 3531 should obtain a copy of the most recent edition.

- STANAG 3101, Exchange of Accident/Incident Information Concerning Aircraft and Missiles
- Applicable 1 Cdn Air Div Orders, wing / base, unit orders
- B-GA-015-003/FP-001, Notes for the Conduct of Investigations into Aircraft Accidents
- B-GA-015-002/FP-001, Aircraft Accident Handbook – Technical Member
- B-GA-015-004/FP-001, Aircraft Accident – Handbook for Aircrew Member
- Aircraft Accident Investigation, Annex 13 to the Convention on International Civil Aviation
- NATO Airborne Early Warning & C Force Command (NAEW&C), Aircraft Occurrence Response Manual, Number 81-100-12, Dated 19 Sep 00
- ASCC Air Standard 85/2A
- CFACM 2-350, Emergency Response Planning
- DAOD 3002-4, Ammunition or Explosives Accident, Incident, Defect or Malfunction Reporting

Annex E
Chapter 9
A-GA-135-001/AA-001

ANNEX E – INITIAL REPORT CONTENT

The following information should be reported in the event of an aircraft occurrence and will form the content of the Initial Report (including CF 215) and be entered into FSOMS within 12 hours of the occurrence.

GENERAL

- Date/Time of occurrence
- Type of occurrence
 - Accident / Incident
 - Air / Ground
 - Bird strike
 - Air Weapons System

SAFETY OF FLIGHT COMPROMISE LEVEL

- Level to which safety margins were compromised
 - Extreme
 - High
 - Medium
 - Low

PERSONNEL CASUALTY LEVEL

- Most serious injury assessed IAW B-MD-007-000/AF-003
 - Nil
 - Minor injury or illness (Green)
 - Serious injury or illness (Yellow)
 - Very serious injury or illness (Red)
 - Fatality (Black)
 - Missing (Grey)
- For each injury
 - MOS ID
 - Role (Aircrew, Maintenance, Other)
 - Position on aircraft if on board
 - Injury Severity
 - PCL

AIRCRAFT

- Aircraft Damage Level (ADL)
 - Missing or Destroyed
 - Very serious damage
 - Serious damage
 - Minor damage

- Potential for incident or accident
- Aircraft Type and Registration
 - Unit of operation
 - Unit of ownership
- Stage of operations (e.g. parked, in-flight with description, maintenance)
- Mission type (short description)
- Flight attributes (if applicable)
- Barrier Engagement (IAS, Wind, Weather, and Temp)

LOCATION

- Location of occurrence (describe)
- Navaid location (applicable for bird strikes)

DESCRIPTION

- Detailed description of occurrence
 - Statement of fact (Who, What, Where and When)
 - De-identified information

PERSONNEL INFORMATION

For each person injured, the following is required:

- Role
- MOS ID
- On board aircraft
- Injury classification (most serious injury assessed IAW B-MD-007-000/AF-003) FS reports shall only provide PCL information. No other medical information or details shall be circulated on the FS net or entered in FSOMS)

CONDITIONS

- Weather
- Cloud
- Visibility
- Light condition
- Wind Speed / Direction

BIRD STRIKE REPORT REQUIREMENTS

The following information should be reported in the event of a bird strike and will supplement the content of the Initial Report and be entered into FSOMS within 12 hours of the occurrence.

BIRD STRIKE REPORT

- Category
 - Impact / Near miss / Sighting
- Remains submitted
 - Yes / No
- Within 5 NM of airport
 - Yes / No
- Flight disruption
 - Continued flight

- Returned to airport
- Landed Nearest airport
- Aborted take-off
- NOTAM warning
 - Was alerted
 - Didn't check
 - None issued
 - Not available
- Lights on
 - External
 - Wing
 - Navigation
 - Strobe
 - Red rotating beacon
 - White rotation beacon
 - Landing
- Part struck
 - Canopy
 - Radome
 - Engine #1 / #2 / #3 / #4
 - Nose
 - Tail unit
 - Wing
 - Fuselage
 - Flap
 - Rotors
 - Landing gear
 - Stores / Tanks
 - Other
- Type of damage
 - Aircraft skin ruptured
 - Air inlets / Scoops blocked
 - Impaired function of flight controls, flaps, spoilers, slats
 - Metal deposited in oil filters or other internal engine damage
 - Windshield or other glazing damaged
 - Fans / Compressor blades, Inlet guide vanes
- Bird description
 - Species / Quantity
- Bird size
 - Small (Starling) / Medium (Gull) / Large (Duck)

ABBREVIATIONS

AA: Airworthiness Authority
ACGP: Air Cadet Glider Program
ACFPF: Air Cadet Powered Flight Program
ADL: Aircraft Damage Level
ADM (Mat): Assistant Deputy Minister (Materiel)
AERE: Aerospace Engineer
AETE: Aerospace Engineering Test Establishment
A/FSIR: Abbreviated Flight Safety Investigation Report
AFSO: Aviation Fluids Services Officer
AGL: Above Ground Level
AIA: Airworthiness Investigative Authority
AIG: Address Indicator Group
AIM: Airworthiness Investigator Manual
AI: Advance Investigator
ALSE: Aviation Life Support Equipment
AOC: 1 Canadian Air Division Air Operations Centre
ATESS: Aerospace and Telecommunications Engineering Support Squadron
ATI: Access to Information
AMO: Aircraft Maintenance Officer
AOIs: Aircraft Operating Instructions
AWO: Air Weapons Officer
AWS: Air Weapons System
AWSTM: Air Weapons Safety Technical Member
BI: Basic Investigator
BOI: Board of Inquiry
Canada COM: Canada Command
CANSOFCOM: Canadian Special Operations Forces Command
CAS: Chief of the Air Staff
CAT: Clear Air Turbulence
CDLS: Canadian Defence Liaison Staff
CDS: Chief of the Defence Staff
CEFCOM: Canadian Expeditionary Forces Command
CF: Canadian Forces
CFAO: Canadian Forces Administrative Order
CFMO: Canadian Forces Medical Order
CFQAR: Canadian Forces Quality Assurance Region
CFR: Aircraft Crash, Firefighting and Rescue

CFTO: Canadian Forces Technical Order
CoC: Chain of Command
COMSEC: Communication Security
CPI: Crash Position Indicator
CTAISB: Canadian Transportation Accident Investigation Safety Board
CVR: Cockpit Voice Recorder
CR: Combined (Initial and Supplementary) Flight Safety Investigation Report
DAEPM: Director Aerospace Equipment Program Management
DAOD: Defence Administrative Orders and Directives
DCDS: Deputy Chief of the Defence Staff
DCdts: Director cadets
DCIEM: Defence and Civil Institute of Environmental Medicine
DF: Direction Finding
DFS : Director/Directorate of Flight Safety
DGAEPM: Director General Aerospace Engineering and Project Management
DGQA: Director General Quality Assurance
DGRC: Director General Reserves and Cadets
Div FSO: Division FS Officer
DND OI: Department of National Defence Office of Information
DPLS: Director Personnel Legal Services
DPM: Director Preventive Medicine
DPSA: Director Procurement and Supply Aerospace
DQA: Directorate of Quality Assurance
DRDC: Defence Research and Development Canada
D Stdzn C: Director Standardization Coordination
ESR: Enhanced Supplementary Flight Safety Investigation Report
FDR: Flight Data Recorder
FLU: French language unit
FOD: Foreign Object Damage
FS: Flight Safety
FSI: Flight Safety Investigation
FSIR: FS Investigation Report
FSO : Flight Safety Officer
FSOMS: FS Occurrence Management System
FSOS (W): Flight Safety Officer Specialist (Weapons)
FSS: FS Specialist
FTI: From the Investigator
FTPO: For Tracking Purpose Only

HALE UAV: High-altitude Long Endurance UAV
HFACS: Human Factor Accident Classification System
HUD: Head-Up Display
IAS: Indicated Airspeed
IAW: In accordance with
ICAO: International Civil Aviation Organization
IFR: Instrument Flight Rule
IIC: Investigator-In-Charge
IR: Initial Flight Safety Investigation Report
IRT: Instrument Rating Test
JAG: Judge Advocate General
MALE UAV: Medium altitude long endurance UAV
MOU: Memorandum of Understanding
MOSID: Military Occupation
MRP: Mobile Repair Party
NATO: North Atlantic Treaty Organization
NBCW: Nuclear, Biological and Chemical Warfare
NDHQ: National Defence Headquarters
NDQAR: National Defence Quality Assurance Region
NDOC: National Defence Operations Centre
NOTAM: Notice to Airmen
NRCC: National Research Council of Canada.
OAA: Operational Airworthiness Authority
PAO: Public Affair Officer
PAR: Precision Approach Radar
PCL: Personnel Casualty Level
PDI: Persons with a Direct Interest
PIREPS: Pilot Reports
PM: Preventive Measure
PMAO: Preventive Measure Action Organization
POL: Petrol, Oil and Lubricants
QA: Quality Assurance
QETE: Quality Engineering Test Establishment
RA: Risk Assessment
RCSU: Regional Cadet Support Unit
Reg FSO: Region FSO (Cadets)
RO: Repetitive Occurrence
RASO: Recovery and Salvage Officer

RCA Ops O: Regional Cadets Air Operations Officer
RCR: Runway Condition Report
SAMA: Senior Aircraft Maintenance Authority
SFCL: Safety of Flight Compromise Level
SOAP: Spectrometric Oil Analysis Program
SOP: Standard Operating Procedure
SITREP: Situation Report
SR: Supplementary Flight Safety Investigation Report
STANAG: NATO Standardization Agreement
TAA: Technical Airworthiness Authority
TCN: Transport Control Number
TSB: Transportation Safety Board of Canada
TSN: Time since new
TSO: Time since overhaul
UAV: Uninhabited Aerial Vehicle
VCDS: Vice Chief of Defence Staff
VFR: Visual Flight Rule