Victoria Flying Club

PIPER
PA-44 Seminole

IFR STANDARD OPERATING PROCEDURES

Edition 1
Issued 3 December, 2017

INTRODUCTION

INTRODUCTION

Distribution List Copies

Flight Crew	As Req
Chief Flying Instructor	1
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Total	8+

Record Of Amendment

No.	Date of Amendment	Date Entered	Entered By
1/2001	initial issue		

INTRODUCTION

List Of Effective Pages

Pages No will differ once corrected

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Comment [LA1]: Chapter 1 Complete
Chatper 2 – Complete, minus Preflight inspection details
Chapter 3 – in progress
Chapter 4 onwards – Not Started

Comment [LA2]:

Chapter 1. General

1.1. Introduction

a) These IFR Standard Operating Procedures (SOPs) are issued by the Victoria Flying Club for guidance in the operation of the Piper PA-44 Seminole. The SOPs cannot cover all circumstances. However, they are intended to assist students to operate the Seminole within the limitations of the Pilot's Operating Handbook. All students are expected to exercise sound judgment and consistency in their application.

b) In order for a pilot to carry out their assigned duties, the pilot must meet a standard, and (for the most part) carry out their duties in a standard manner. The SOPs deal primarily with the standardization of how to complete their duties. Standardization is one of the most powerful tools available to the pilot to prevent the undesirable, to determine when something undesirable is occurring, and to deal with the undesirable should it occur. These SOPs are provided as a part of the standardization tool. However, a standard procedure cannot be devised to cope with all situations.

c) This chapter contains information of a general nature that applies to several aspects of the operation or does not conveniently fit into the other more specific chapters.

d) Generally SOPs are designed for less complex aeroplanes and two crew environments, however, to prepare you for future jobs where SOPs will be commonplace, VFC has developed these SOPs to assist you, and assist the overall learning process.

e) These SOPs do not deal in the theory and skills to interpret gauges and techniques for basic flight, but rather the specific procedures and techniques for IFR flight in the PA-44 Seminole.

1.2. Application

a) Publications The SOPs supplement and expand on the information contained in numerous publications. In particular the SOPs supplement the following publications:

i) Piper PA-44 Seminole approved Pilot's Operating Handbook (POH);

ii) Instrument Procedure Manual (IPM):

iii) Canadian Aviation Regulations (CARs).

b) Pilot's Operating Handbook Every effort has been made to ensure that the SOPs are compatible with the approved Pilot's Operating Handbook. The SOPs are designed to promote the pilot duties during operation of the PA-44 Seminole aeroplane. The SOPs are not intended to replace the Pilot's Operating Handbook, but to supplement it. Therefore, there are many cases where the SOPs detail additional requirements to the POH.

c) Company Policy These SOPs serve as a supplementary procedure manual. Club policy still governs the operation of aircraft at the Victoria Flying Club, and supersedes these SOPs

1.3. Amendment

a) Suggestions for amendment of these SOPs are to be forwarded in writing, to the Chief Flying Instructor. Whether or not a suggestion is implemented, a written reply will be provided to the person who has submitted the suggestion.

b) The Edition Number and date that the edition was issued will be indicated on the cover page. The Edition Number and date will not change with subsequent amendments until a new edition is issued. The edition number will be shown in the header for each page.

c) Amendments will be designated by number and date of issue. Amendment status of each page is indicated at the bottom left of the page. The current amendment status of the entire Standard Operating Procedures document is shown at the "List of Effective Pages" and at the bottom left of the title page. Amendment "0" indicates a not amended or original page. A list of all of the amendments in the current edition is shown at the top of the "List of Effective Pages & Amendment Record." Subsequent amendments will be given sequential numbers. When a new edition is issued, the amendment numbers will begin again at "0." The periodic amendments will replace the cover page, the "List of Effective Pages & Amendment Record", and the pages that have changed. Included with each amendment will be instructions designating the pages to be removed and inserted, as well as a summary of what has changed in the body of the SOPs.

d) When an amendment is issued, it shall be distributed as indicated at the "Distribution List" in the pre-chapter of the SOPs.

1.4. Distribution

a) The distribution of the SOPs is shown at the "Distribution List" in the Intro.

b) At least one copy of the SOPs shall be carried on board the aircraft during flight. The Pilot in Command is responsible for ensuring the SOPs are carried in the aircraft during flight operations.

1.5. Abbreviations and Acronyms

a) The following abbreviations and acronyms are used in the SOPs. Where the abbreviation or acronym is derived from another document (such as the Pilot's Operating Handbook), the reference for that acronym is shown by the title of the publication preceded by the abbreviation "ref." The expanded text for the abbreviation or acronym is shown in this section. For definitions of terms see the Definitions section. Items are sorted in ascending alphabetical order sorted by abbreviation or acronym - vice the expanded text. Generally, the periods "." have been omitted from the abbreviation unless required for clarity.

AIP	Aeronautical Information Publication Canada
POH	Pilot's Operating Handbook
ATC	Air Traffic Control, (ref. AIP)
BLUELINE	See V_{YSE}
CAP	Canada Air Pilot
CARs	Canadian Aviation Regulations
CFR	Airport Crash, Fire Fighting and Rescue Services (DND) (ref. CAP)
DH	Decision Height (ref. CAP)
ELW	Estimated Landing Weight
FAF	Final Approach Fix (ref. CAP)
FAWP	Final Approach Waypoint (ref. CAP)
FOD	Foreign Object Damage
GNSS	Global Navigation Satellite System
GPS	Global Positioning System (ref. AIP)
HAA	Height Above Aerodrome (ref. CAP)
HAT	Height Above Touchdown Zone Elevation (ref. CAP)
IAF	Initial Approach Fix (ref. CAP)
IAS	Indicated Airspeed (ref. AIP)
IAWP	Initial Approach Waypoint (ref. CAP)
IF	Intermediate Fix (ref. CAP)
ILS	Instrument Landing System (ref. CAP)

NORMAL PROCEDURES

IMC	Instrument Meteorological Conditions (ref. CARs)
IWP	Intermediate Waypoint (ref. CAP)
KIAS	Knots Indicated Airspeed
MDA	Minimum Descent Altitude (ref. CAP)
MTOW	Maximum Takeoff Weight
MLW	Maximum Landing Weight
NAVAID	Navigational Aid (ref. AIP)
PF	Pilot Flying
PNF	Pilot Not Flying
RCR	Runway Condition Report (ref. AIP)
RNAV	Area Navigation (ref. AIP)
RWY	or Rwy Runway (ref. CAP)
SOP(s)	Aeroplane Standard Operating Procedure(s)
STAR	Standard Terminal Arrival (ref. CAP)
V_1	Take-off decision speed, (ref. POH) [or as per the POH]
V_2	Take-off safety speed, (ref. POH) [or as per the POH]
VAC	Volts Alternating Current
V_{app}	Approach Speed, (ref. SOP)
V_Y	Best Rate of Climb Speed, (ref. POH)
VDC	Volts Direct Current
V_{fe}	Maximum Flap Extend Speed, (ref. POH)
V_{le}	Maximum Landing Gear Extended Speed, (ref. POH)
V_{lo}	Maximum Landing Gear Operating Speed, (ref. POH)
VMC	Visual Meteorological Conditions (ref. CARs)
V_{mc}	Minimum Control Speed, (ref. POH)
VNAV	Vertical Navigation
V_{ne}	Never Exceed Speed, (ref. POH)
V_r	Rotation Speed, (ref. SOP)
V_{ref}	Final Approach Reference Speed, (ref. POH)
VS	Vertical Speed

V_s	Stalling speed, (ref. POH)
VSI	Vertical Speed Indicator (ref. Instrument Procedures Manual)
V_{so}	Stalling Speed in the landing configuration, (ref. POH)
V_{xse}	Best single engine angle of climb speed, (ref. POH)
V_{YSE}	Best singe engine rate of climb, (ref. POH)

1.6. Definitions

a) The following are selected definitions. Although other meanings may apply to some words or terms, the definition indicated applies in this manual. Where the definition is derived from another document (such as the Pilot's Operating Handbook), the reference for that definition is shown by the title of the publication preceded by the abbreviation "ref." Where a commonly used abbreviation or acronym applies, it will be shown with the definition.

b) There are a number of items that have more than one term, title, or name applied to them. In such cases the terms that are found in official or semi-official documents are used in these SOPs. Nevertheless, some items have different terms in the CARs/CAP/AIP and the POH. In such cases both terms will be used in the SOP. However, most verbal commands and calls will use the term from the POH.

Excessive Bank For the purpose of these SOPs, Excessive Bank is a bank angle of more than 30^{o} in VMC, or Bank required for a Rate One Turn in IMC.

Excessive Rate of Descent For the purpose of these SOPs the following are Excessive Rate of Descent situations:

a) During an instrument final approach, an unplanned and/or not briefed descent rate of more than 1000 FPM.

Excessive Speed For the purpose of these SOPs the following are Excessive Speed situations:

b) More than 5 KIAS below or more than 10 KIAS above the briefed or target airspeed on an instrument approach (V_{app}), or for any situation where a specific airspeed is required such as an engine out procedure.

Pilot's Operating Handbook (POH) (ref. CARs) Is the manual furnished by Piper that meets the requirements specified in the CARs for the operation of Piper PA-44 Seminole. For these SOPs the POH is the [name and stock/manual number of Flight Manual, Pilot's Operating Handbook, or other document].

Altitude Deviation For the purpose of these SOPs an Altitude Deviation occurs when the Aeroplane is at or beyond the limits described in the following situations:

a) Any distance below, or 60 ft above an MDA unless otherwise briefed, but never below MDA under any circumstance;
b) 200ft above or below: any other briefed altitude on an instrument approach once that altitude has been achieved, except;

c) Any deviation below a published minimum altitude;
d) 200 ft above or below an en route altitude once that altitude has been achieved.

This definition should not be considered as condoning deviations from altitudes. It is merely a tool to be used to trigger a coordinated pilot action to correct an undesirable situation.

Approach In these SOPs, "Approach" means the arrival at an aerodrome and includes: Instrument Approaches, Visual Approaches, Contact Approaches, Circuits, Circling from an Instrument Approaches, and Landings

Area Navigation (RNAV) A method of navigation that permits Aeroplane operation on any desired course within the limits of station-referenced navigation signals or within the limits of a self-contained system capability, or a combination of these. Navigation systems that provide RNAV in the PA-44 Seminole include VOR/DME and GPS.

ATC Heading A heading issued by ATC that the Aeroplane is to turn to and maintain. May be part of a vector and may include a speed and/or an altitude.

ATC Speed A speed issued by ATC that the Aeroplane is to maintain. May be part of a vector and may include a heading and/or an altitude.

Pilot The student

Full Power The maximum power available as limited by the engine controls themselves when they are set to their absolute maximum limit of travel. This definition should not be considered as condoning the setting of engine power that is not approved in the POH. It is a tool to facilitate pilot coordination for setting of all available power as a final resort to prevent an accident.

Glide Path (ref. Instrument Procedures Manual) A descent profile which is electronically determined for vertical guidance during a final approach. The term Glide Path is used in a number of official and semi-official documents, such as: CARs, CAP, Instrument Procedures Manual. In this manual it is used interchangeably with the term "Glide Slope."

Glide Slope Has the same meaning as "Glide Path." The term "Glide Slope" is primarily found in technical manuals such as the POH.

Heading Deviation For the purpose of the SOPs a Heading Deviation is an apparent deviation from the assigned or briefed heading of more than 5^{o}.

May Indicates permission.

Must Primarily mandatory; may be used in a permissive sense.

Non-Precision Approach (ref. CARs) An instrument approach by an Aeroplane using azimuth information (only).

Practicable Physically possible.

Practical Available or useful.

Precision Approach (ref. CARs) An instrument approach by an Aeroplane using azimuth and glide path information.

Required Navigation Performance (RNP) Refers to position accuracy required during any given phase of flight. In the PA-44 Seminole, only the GPS can provide RNP

Required Visual Reference (ref. CARs) Required visual reference, in respect of an Aeroplane on approach to a runway, means that section of the approach area of the runway or those visual aids that, when viewed by the pilot of the Aeroplane, enable the pilot to make an assessment of the Aeroplane position and rate of change of position, in order to continue the approach and complete a landing.

RNAV (GNSS) Approach A GPS approach

Shall Indicates an imperative. Compliance is mandatory (similar to "will"). Note that the use of the imperative "shall" requires caution. Its usage is only effective if the object applies in all cases. For example, issuing a directive using the imperative "shall" that applies in normal but not in abnormal situations would be inappropriate. In most cases, use of the term "should" is more appropriate.

Should Indicates an obligation. Compliance is expected but not mandatory.

Take-off Power (ref. POH) See Take-off Power

Will Indicates that compliance is mandatory (similar to "shall").

1.7. Notes, Cautions, and Warnings

a) Some information that requires emphasis is expanded upon in the form of a note, caution, or warning. The usage of each and method of display follow.

NOTE

Expands on information which has already been provided

CAUTION

Provides information to prevent damage to equipment

>> WARNING <<
Emphasizes information of immediate flight safety importance

1.8. Units of Measure

a) Unless otherwise specifically stated the following units of measure (and their abbreviations) are used in these SOPs and are to be used during the operation of the PA-44 Seminole Aeroplane:

i) Airspeed: Indicated Airspeed in Knots, (KIAS)

ii) Altimeter Setting: Inches of Mercury, (In Hg);

iii) Altitudes, elevations, heights: Feet, (ft, or '), note that heights Above Sea Level (ASL) or Above Ground Level (AGL) imply feet as the unit of measure;

iv) Distances:

v) Navigation: Nautical Miles, (NM);

vi) Visibility: Statute Miles, (SM);

vii) short distances (ie. runway length): Feet, (ft, or ');

viii) Very short distances (ie. weight and balance calculation): Inches, (in., or ");

ix) Fuel:

a) Volume: Liters, (G);

b) Weight: Pounds (LBS);

x) Horizontal Speed: Knots, (KTS);

xi) Temperature: degrees Celsius, (^{o}C);

xii) Vertical Speed: Feet Per Minute, (FPM)

1.9. Checks, Checklists, and Drills

a) General Checks, Checklists, and Drills have been developed for the operation of the PA-44 Seminole Aeroplane to ensure that the required actions are not inadvertently omitted or completed in an inappropriate sequence. In this manual a

check is a series of actions; a checklist is the physical written document that is associated with the check. A drill is a check for an abnormal or emergency situation that requires immediate action and is therefore, carried out from memory without reference to the checklist. Copies of the abbreviated checklists are found in annexes following the applicable chapter. The checklists are expanded upon in the body of the chapters. The expanded checklists provide additional detail (if applicable) for each checklist item. The abbreviated form of the checklists are found in the checklist flipbook that shall be carried onboard the Aeroplane.

b) Completion of Checks and Drills All checks and drills once initiated shall be carried out in the sequence that they are listed until complete. No items may be deleted nor the order be altered. Generally, the only memory procedures are for emergency drills that require immediate action; and checks that are typically done in a high workload environment where a memory procedure would be advantageous.

c) Checklist Verbal Procedures When initiating a check item or response, the saying of specific wording in the checklist may be used, saying or speaking may aid in checklist completion. Additionally, expected gauge or light indication attributed with a given item should be confirmed as required, eg.

i) Gear Selector **DOWN**

This indication would be confirmed by checking the position of the gear selector lever against the light indications of the landing gear. The pilot would verbalize "Down, three green" in this case

d) Situational Awareness Control of the Aeroplane at all times is paramount. Checks and drills are specified as either verbal or non-verbal and should only be completed while the Aeroplane is in control. Verbal checks are so designated to further the situational awareness of and to provide a measure of monitoring for the single pilot.

e) Layout of Checklists Checklists are laid out using the following conventions:

i) The title block is printed at the left margin with the title in italics, underlined, uppercase text, and ended with a semi-colon. Eg:

BEFORE LANDING CHECK:

ii) To the extent practical, the actual text of labels that are found on switches or controls are used in the checklists. If a label is available for the setting or position that a switch or control is to be moved to, the actual text of the setting or position is used in the checklist. When the actual text of a label is

used in a checklist it is printed in uppercase type. When other than the actual text of a label is used, the item is printed in standard title format, ie. first character uppercase and remaining characters lower case. Any symbols (such as bullets, 24 hour check indicators) are to the left of the item by two spaces.

iii) The subject or target of the desired action is shown at the left side of the checklist in normal type (not bold).

iv) The action to be taken is shown on the right side of the checklist in bold face type.

v) The items on the left and the items on the right side are joined by dot leaders, or separated by a dash in the case of the flipbook checklist.

f) Types of Checks and Drills The checks and drills for the PA-44 Seminole are divided into two primary categories: Emergency Procedures, and Normal Procedures.

i) The Emergency checks and drills are found in the second part of the checklist document and can be differentiated from the normal checks by color-coded pages as follows:

- Red: Engine Fires
- Pink: Engine Failures
- Yellow: Electrical and Vaccuum Failures
- Blue: Fuel-Related failures
- Green: Other Failures

The Abnormal and Emergency checks and drills are expanded upon and discussed in the chapter dedicated to those procedures.

ii) The checks for Normal Procedures can further be divided as follows:

a) Pre-flight Inspection This check is completed silently with or without reference to the printed checklist. This is the only non-verbal check.

b) Read and Do Checks The checks are carried out by the pilot by reference to the checklist.

c) Memory Checks These checks require discipline by the pilot to complete the checklist in order. Checks that are done from memory

are done in the same manner as non-memory checks except that the action is issued from memory. They include the following:

(1) RWY Line-up Checks

(2) GUMPS checks

1.10. Aeroplane Control

a) General It is absolutely essential that during all phases of ground and flight operation that the Pilot control the Aeroplane.

1.11. Pilot Coordination

a) General Pilot coordination is vital to the safe and effective accomplishment of all flights. The pilot has overall responsibility for the safety and success of the operation. During periods of high workload or high stress, it may be very difficult to ensure that critical information is assimilated and acted upon appropriately. It is the responsibility of the pilot to ensure that critical information is passed, understood, and acted upon in a manner that fits the situation.

b) Procedures Description Procedures and the pilot coordination involved are detailed in tables distributed throughout these SOPs. The tables are in two or more vertical columns... Each action is contained in a single lateral row and contains all of the actions and verbal calls of the pilot. The situations are centered on the respective pages. The actions to be taken are shown with a dash "-" and indented one tab stop. Any verbal calls are treated as actions and are distinguished by being enclosed in quotation marks and bolded.

Comment [LA3]: Adjust this when the final format for procedures has been finalized

c) Abnormal and Emergency Procedures The pilot actions for Abnormal and Emergency situations is discussed in the chapter dedicated to those procedures.

1.12. Communication

a) General To foster communication and to avoid misidentification and misinformation in dealing with outside agencies (such as ATC), the pilot must communicate effectively. To improve the likelihood that information is passed correctly or that a deviation from the desirable is detected, much of the communication that goes on must be standardized in content and phraseology. Specific direction as to the exact wording to be used and related actions, is located throughout the SOPs. The information on communication that is contained in this

section does not fit into other sections or is sufficiently broad in application that it is more appropriate to place it here, in a general area.

b) Radio Procedures For normal operations one single radio should be monitored at a time if any future operational frequencies are loaded on the other radio. Caution must be exercised when monitoring two radios at the same time as ATC instructions and clearances on the primary radio may be missed.

c) Radio Procedures – Call Sign In any transmission to ATC or non-company station the pilot shall use the appropriate callsign, as described below

i) Normal training flights shall use “FHDP” as the callsign, as well as the procedures described in the AIP shall be followed

ii) Flight Tests shall use the “REGS” callsign, followed by the examiner’s REGS number. For example:

- “Victoria Tower, REGS 79 Holding short runway 27, ready for take-off”

d) Aeroplane Internal Communication Any operational communication whether on the intercom or normal voice shall be acknowledged by the recipient. Although it is not possible to specify all appropriate responses, the following list covers the bulk of situations:

e) Standard Phraseology The following standard phraseology should be used for communications during Aeroplane operations.

i) Altimeter Setting When saying an altimeter setting, the decimal is omitted but all of the digits are included, eg., 29.89 In Hg is read as "two niner eight niner."

f) Conversation on the Flight Deck and Non-operational Radio Transmissions
During the following periods, no conversation is permitted other than that required for assigned work or for the operation of the Aeroplane. During the same periods no non-operational radio transmissions are permitted.

i) From engine start to top of climb;

ii) During descent, from top of descent until the Aeroplane has stopped at the completion of the flight;

iii) During the handling of any abnormal situation.

g) Radio Transmissions to Company Organizations No transmissions to company organizations are permitted during the following periods:

i) From taxi on to any active runway or take-off/landing area until the completion of the after take-off check;

ii) From the beginning of the before landing check to until clear of any active runway or take-off/landing area;

iii) During an abnormal or emergency situation except as required to deal with that situation.

h) Transmissions to company organizations are to be made as follows:

i) Any maintenance issues that arise-midflight where the next booking may be affected by the issue, as a courtesy, and as flight conditions permit.

ii) The company frequency is 129.05

1.13. Barometric Altimeter Setting Procedures

a) When receiving an altimeter setting that is either new or unchanged from another agency by radio, the pilot should read that altimeter setting back to the agency. An example follows

i) “Altimiter 2989, HDP”

1.14. Navigation Systems

a) General To the extant practical, the displays for the pilot are to be set up and crosschecked by the instructor. The purpose of this directive is to make more apparent a deviation from the desired.

b) Primary and Secondary Displays The HSI is the primary display, and is selectable to either NAV1 or the GPS. The VOR indicator is the secondary display and is connected to NAV2, which is also the DME source in the aircraft. The RMI is connected to the ADF. Whenever possible, the primary display should be used for navigation on the current leg based on published charts in VLOC, or GPS Desired Track (DTK), with a few exceptions:

i) The HSI will be set up ahead of a turn to the Track of the next Leg. In GPS mode, the GPS will indicate when to make this change. In VLOC mode, this

will set up 5 miles before the anticipated turn. During this time, VOR2 will be used to maintain current track.

ii) The HSI will be set up for any Hold as soon as a hold clearance is read back and confirmed. During this time, current track will be maintained on VOR2.

iii) During Radar Vectoring, the HSI will be set up for the next navigation to be expected by ATC. Typically, this will be either:

a) A straight-in approach, or;

b) The flightplanned route leg that can be expected in a further clearance

c) GPS Displays There is a good deal of variation amongst pilots in how each one best assimilates information. However, some commonality is useful in that crew members can more readily detect inappropriate selections on their own and other displays if there is some common basic coordination requirement. The following is provided as guidance; further direction is provided elsewhere in the SOPs:

i) heading reminders (heading bugs) should be set to the same heading;

ii) course displays (track bars) should be set to the same navigation and track information unless one is required to display other information (such as crossing fix position, or leading a turn);

iii) course displays should be set to the same NAVAID unless otherwise required;

iv) The RMI should be set to display navigation information for the procedure being flown (if applicable);

v) additional bearing pointers may be set to the individual pilot preference;

vi) The default GPS navigation page is the moving-map display NAV 2, and the data fields shall be displayed in the following order, from top to bottom:

1. WAYPOINT (WPT)
2. Desired Track (DTK)
3. Distance (DIS)
4. Ground Speed (GS)

vii) The Garmin default navigation page is NAV 1. Caution should be used when using the quick-return feature of the GARMIN since it will not bring you back to the company default NAV 2 page.

viii) The date fields on NAV 2 may be adjusted to pilot preference, but the following fields are recommended

a) Desired Track (DTK)
b) Track (TRK)
c) Distance (DIS)
d) Estimated Time Enroute (ETE)
e) Groundspeed (GS)
f) Cross-track Error (XTK)

Chapter 2. Pre-Flight

2.1. Introduction

a) This chapter of the SOPs, "Pre-Flight", provides guidance for the period up to but not including the start of the first engine with the intent of going flying. It does include starting of an engine to reposition the Aeroplane prior to the final taxi out for departure.

2.2. Lesson Booking

a) Lesson bookings are the responsibility of the student

b) Standard bookings are 2.0 hours long, with an expected flight time of 1.7 hours. Flights that can be expected to be longer than this (Multiple holds during lesson, multiple full-procedure approaches, or combination thereof) should consider a 2.5 hour booking to prevent unneccesary delays to other students

c) Ground brief time is additional to the above booking requirements, and should be booked as ground brief as appropriate given the nature of the lesson.

d) Students are expected to be ready to begin training at the start of the lesson. Failure to do so may result in lesson cancellation due to the strict nature of IFR slots and Seminole booking.

e) Where possible, and where no extended ground brief is planned, students should preflight the aircraft as able prior to the booking

IFR flights in the Seminole are seldom shorter than 1.6hrs of flight time. Should you need more time for pre-flight duties such as preflight inspection and fueling, this should be reflected in the length of aircraft booking. Preflight responsibilities such as weight and balance calculation and flight planning should be completed prior to the aircraft booking, and therefore not included in the booking time.

2.3. IFR Training Flight Approval

a) As per the CFS, IFR Training in the Vancouver Terminal Control Area requires Prior Permission. IFR slots are required in order for IFR training flight plans to be filed.

b) Unless otherwise arranged by the student and instructor, the student is responsible for booking an IFR training slot with Vancouver IFR Training at the Vancouver Area Control Centre.

Comment [LA4]: Do we want Underlined titles for each alphabetic entry like in Chapter 1? Get consistent.

c) Unless otherwise arranged, slot times are typically 30 minutes long, starting 60 minutes after the booking time begins.

d) IFR training slots may be obtained at +1 (604) 586-4592 at the following times

i) For IFR slots prior to 12:00L, by phoning at 07:30L

ii) For IFR slots after 12:00L, by phoning at 11:00L

c) IFR slots are given on a first-com first-serve basis. It is expected that the student will phone promptly at the appropriate time for the required slot time.

d) Failure to obtain an IFR slot may result in cancellation of training

2.4. Reporting for Flight

a) The student shall report for duty no less than 30 minutes prior to booking time to complete preflight inspection and fueling in accordance with IFR Slot time and guidance in section **2.2**

2.5. Planning

a) Flight Plans Unless otherwise arranged, the student shall prepare any operational flight plans, all required performance computations, and ATC flight plans/itineraries. Route templates are available at the Dispatch counter. Currently, the approved routes are as follows:

i) CYYJ – CYXX – CYYJ
ii) CYYJ – CYXX – CYCD - CYYJ

b) Route Selection Flight routes are to be consistent with CFS Mandatory routing procedures

c) Route Filing IFR Training flights are to be filed with Vancouver IFR Training at +1 (604) 586-4590

NOTE
IFR training flights filed with Kamloops FIC may be denied clearance

d) Weather Considerations Planning must be done in accordance with minima published in the CAP, and the General section of this SOP.

Comment [LA5]: These styles of entries really pop, try to make this constant for lettered entries, otherwise place up one indent hierarchy without a list

2.6. Fuel Requirements

Fuel requirements will differ from flight to flight, and is the shared responsibility of the student and the instructor.

a) Standard Fuel Standard fuel for the prescribed routes is 80 gallons

b) Reduced Fuel If Single Engine Climb performance requires a reduction in weight, a reduction to 70 gallons is acceptable

c) Minimum Fuel At no time may the fuel requirement be less than those established in the Canadian Aviation Regulaions 602.88:

(4) An aircraft operated in IFR flight shall carry an amount of fuel that is sufficient to allow the aircraft

(a) in the case of a propeller-driven aeroplane,

(i) where an alternate aerodrome is specified in the flight plan or flight itinerary, to fly to and execute an approach and a missed approach at the destination aerodrome, to fly to and land at the alternate aerodrome and then to fly for a period of 45 minutes

(5) Every aircraft shall carry an amount of fuel that is sufficient to provide for

- **(a)** taxiing and foreseeable delays prior to take-off;
- **(b)** meteorological conditions;
- **(c)** foreseeable air traffic routings and traffic delays;
- **(d)** landing at a suitable aerodrome in the event of loss of cabin pressurization or, in the case of a multi-engined aircraft, failure of any engine, at the most critical point during the flight; and
- **(e)** any other foreseeable conditions that could delay the landing of the aircraft.

2.7. Aircraft Dispatch, Weight and Balance, and Maintenance Control

Aircraft Dispatch Authority, Weight and Balance, and Maintenance Control is completed by Victoria Flying Club's Fleet Captain dispatch system. The dispatch authority must always

be used, even if manual weight and balance has been calculated. Errors in the Fleet Captain dispatch sheet must be addressed prior to aircraft dispatch.

Prior to each flight each the student and instructor shall review on the dispatch sheet :

i) Aircraft TTSN

ii) Next Maintenance Time

iii) Minimum Dispatch Fuel

iv) Weight and Balance totals

The Dispatch sheet must be initialed by both the instructor and student once this data is verified, and the instructor's signature must be place in the PIC box for the dispatch authority to be considered valid.

>> WARNING <<

No flight may be dispatched if the dispatch authority is inaccurate or incomplete. Failure to complete the dispatch procedures is ground for Transport Canada enforcement action

2.8. Pre-Flight Inspection

a) Pre-Flight Inspection The Pre-flight inspection shall be completed before each flight. It shall be completed in its entirety whenever the Aeroplane has been completely de-powered. It is to be completed in accordance with the instructions in the POH.

Comment [LA6]: Confirm with VFC whether this gets left like this, or if POH procedure should be tossed in

2.9. Emergency Procedures Review

Prior to the first flight of the day the Pilot should review the memory portions of a selected emergency procedures.

2.10. Pre-Start Check

PRE-START

Parking Brake	**SET**
Passenger Briefing	**COMPLETE**
Cabin & Cargo Doors	**SECURE**

The Main door has two locks – one at the armrest, and another above the instructor's head. The Cargo door can only be checked visually from inside the aircraft, therefore it is important to verify that it is locked prior to entering the aircraft.

Seatbelts	**SECURE**
Fuel Selectors	**ON MAINS**
Trims	**SET**

The rudder trim should be verified during the pre-flight inspection since the indicator inside the cockpit may not properly reflect rudder trim position

Wing Flaps	**RETRACTED**
Cowl Flaps	**OPEN**
Carb Heat	**OFF**
Circuit Breakers	**CHECK**

The Alternator and Battery breakers are found on a separate panel below the main circuit breaker panel

Avionics Master	**OFF**

If the Master switch is ON, the headset jacks will still work even if the Avionics Master is OFF.

Quadrant Friction	**SET**
Mixtures	**RICH**
Props	**FULL FINE**
Throttles	**¼" OPEN**
Gear Selector	**DOWN**

Confirmation of gear lever position should NOT be tactile in order to prevent inadvertent retraction of the gear while on the ground. A visual confirmation of switch position and indicating lights is all that's required.

Alternate Static	**OFF**

The Alternate Static switch is in the OFF position if it is turned parallel to the instrument panel.

Electrical Switches	**OFF**

2.11. Repositioning using Aeroplane Engines

a) For repositioning of an aeroplane using one or more of its engines, the checks in the following paragraphs shall be carried out. Even though it may not be necessary to start all of the engines to taxi the Aeroplane, all of the checks shall be carried out. It is recognized that not all of the items will need action. However, to reduce the risk of missing an important item, all of the checks listed are to be completed.

i) Before Start Check;

ii) Engine Start Check;

iii) Before Taxi Check;

iv) After Landing Check;

v) Shutdown Check.

Annex A to Chapter 2
Pre-flight,
Abbreviated checklists

Pre-flight Checklists

The abbreviated form of the Pre-flight checklists follows.

PREFLIGHT INSPECTION

Left Right Fuselage

Fuel Caps	**Secure**
Left Fuselage	**Checked**

Left Right Engine Nacelle and Wing

No. 1&2 Engine Oil	**4.0-4.5 qts.**

CAUTION

Ensure oil tank cover is secure. Unsecured oil tank cover will cause complete loss of oil supply.

Wing trailing edge	**Checked**
Wing tip & position lights	**Checked**

INTERNAL CHECK

Passenger Seats	**Checked**
First Aid Kits	**Checked**
Fire Extinguishers	**Checked**
Cabin Windows	**Checked**

PRE-START

Parking Brake	**SET**
Passenger Briefing	**COMPLETE**

Cabin & Cargo Doors	**SECURE**
Seatbelts	**SECURE**
Fuel Selectors	**ON MAINS**
Trims	**SET**
Wing Flaps	**RETRACTED**
Cowl Flaps	**OPEN**
Carb Heat	**OFF**
Circuit Breakers	**CHECK**
Avionics Master	**OFF**
Quadrant Friction	**SET**
Mixtures	**RICH**
Props	**FULL FINE**
Throttles	**¼" OPEN**
Gear Selector	**DOWN**
Alternate Static	**OFF**
Electrical Switches	**OFF**

Chapter 3. Normal Flight Procedures - Departure

3.1. Introduction

This chapter of the SOPs, "Departure", provides guidance for normal operations from the start of a power plant through the departure and climb portion of the flight, up to but not including level-off.

3.2. Engine Start

The abbreviated "Engine Start Check" is found in the checklist. The procedure follows.

ENGINE START CHECK

Magnetos		**ON**
Fuel Pumps	**ON**	
Beacon Light	**ON**	
Alternators		**ON**
Master		**ON**
Fuel Pressure		**CHECK**

A minimum of 5 PSI should be indicated on both engines.

Prop Area **CLEAR**

The following table is to be done for each engine. The Left engine is typically started first.

	Pilot
Primer	**As Required**
Priming normally requires 7 pumps of the priming pump	
Starter	**ENGAGE**
Hold starter until engine RPM jumps noticeably	
Throttle	**1000RPM**
Oil Pressure	**CHECK**

Pilot	
Oil pressure may indicate in Yellow Zone at low RPM. It shouldn't be below the low oil pressure limit denoted by the red line	
Oil Temperature	**CHECK** Oil Temperature may not indicate in cold weather
Suction Button	**IN**
Mixture	**LEAN** Mixture should be leaned slowly until an RPM rise is noted, then the throttle reset to 1000RPM
Fuel Pump	**OFF** Fuel Pressure should not drop below green arc

3.3. Post Start Procedures

The post-start checklist involves much of the navigation and radio setup. It is summed up by a single post-start checklist which has been expanded on through the following sections in detail, the checklist for which follows further below.

3.4. GARMIN 430W GPS Initialization and Programming

a) Initialization Upon power-up following turning on the Avionics Master switch, the GARMIN 430W will go through a few screens and self-tests before pausing on the database page. The Aviation Database must be current, displayed in white. Confirming the data on this page advances the GARMIN to the instrument check page

NOTE

Expired Databases cannot be used for IFR navigation

b) GPS HSI Check The next page is the instrument check page. In the PA-44 Seminole, only the HSI displays GPS information. Confirm accuracy of HIS indication with the required indication listed on the GPS screen before advancing.

c) Route Programming The reverse path checking procedure that is described in this paragraph is similar to that used for single RNAV initialization. It is also intended to reduce the risk of incorrect typing of data into an RNAV system. For use of Waypoints that are extracted from a database that is integral to the RNAV system, the individual waypoint component data shall be verified for accuracy against an external document. The data checking is required any time when it can not be positively determined that the waypoint has been verified since the last database update. Unfortunately, database information has on occasion been reported to have errors.

d) Pre-programmed Routes Pre-programmed routes need be checked by the pilot. Errors are to be corrected as described in the preceding paragraph. Pre-programmed routes need to be checked if the database has been updated.

3.5. Navigation Aids – Set-up for Departure

If practical, navigation equipment should be set as required before commencing taxi. Navigation equipment should be set up as follows:

a) For local flights, set the active mode of the navigation equipment for the procedure that is expected to be flown after take-off. Secondary modes should be set to the next most likely procedure.

b) For other than local flights departing in weather that may permit a return to the departure aerodrome, set the active mode of equipment for en route flight. Secondary modes should be set to facilitate recovery at the departure point.

c) For flights that are departing in weather that is unlikely to permit a return to the departure aerodrome, set the active mode of equipment for en route flight. Secondary modes should be set to facilitate recovery at the take-off alternate.

3.6. Post Start Check

The Post Start Check is a very important part of the overall IFR flight as the initial avionics setup occurs during this phase. Attention to detail is important in order to prevent mistakes, and adherence to the checklist provides a briefing opportunity to confirm any avionics set up completed earlier. It's important that avionics setups are completed before the respective brief for this reason.

POST-START CHECK

Left Fuel Selector **CROSSFEED**

Annunciator Lights **TEST**

Annunciators must be checked before each flight. They include:

(1) VAC/OIL/AMP
(2) Chip Detectors
(3) Heater Overheat

Avionics Master **ON**

After the avionics master is switched on, a quick intercom check should be performed to ensure function of the intercom system

HSI & RMI **SLAVED**

The HIS slave controller can be used to adjust the HSI position and confirm HSI centering against the magnetic compass. The RMI should be adjusted to match the heading of the HSI

GPS Database & CDI **CHECK**

The GPS Database and HSI will be checked as detailed in **3.4**

ATIS **COPY**
Altimeter **SET**
IFR Clearance **OBTAIN**
Transponder **STANDBY, CODE CONFIRMED**
VORs **CHECK**

Both VORs will be checked against each other by tuning a local VOR and comparing the radials that center the CDI needle. A difference of up to 4deg is acceptable

Avionics **SET**

Complete the GPS and avionics setup in accordance with sections **3.4** and **3.5**

VLOC/GPS MODE **SET**

The CDI will be set to display the appropriate navigation source consistent with the departure procedure selected

IFR Departure Brief **COMPLETE**

The IFR departure briefing will be completed by the student by referencing the appropriate page in the CAP. The departure briefing will include:

i) SID name, if applicable

ii) Transition (if applicable)

iii) SID/Departure Procedure page

iv) Lateral Navigation on Departure

v) Vertical Navigation

vi) Radio Frequencies for Departure

vii) Communication Failure Procedure

Any RNAV SID instrumentation requirements will be crosschecked during the IFR Departure Brief

Left Fuel Selector **ON MAIN**
Right Fuel Selector **CROSSFEED**

3.7. Taxi Check and Procedures

a) General The Aeroplane is normally taxied from the left seat only, using powered nose wheel steering. During taxi, at least one VHF radio shall be on, tuned to an appropriate frequency that would permit exchange of traffic information, and monitored by the pilot.

b) Wheel Brake Checks As soon as possible after beginning to taxi, the Aeroplane wheel brakes should be checked for proper operation

c) Taxi Speed Taxi speed shall be appropriate to the conditions. When taxiing in congested areas the Aeroplane shall be taxied at no more than walking speed. For taxiing in open areas taxi speed may be increased, but shall not be such that harsh braking or turning at high speed is required. For taxiing on surfaces contaminated by slush, snow, or standing water, speed shall be adjusted (increased or decreased) to minimize impingement of spray/snow on the Aeroplane. For taxiing on gravel, loose surfaces, or unprepared surfaces, speed shall be adjusted (increased or

decreased) to minimize FOD to engine intakes and propellers. For turns of more than a few degrees, the Aeroplane shall not be taxied at more than walking speed. Reduced speed in turns is required to reduce lateral strain of the Aeroplane and minimize the possibility of a tire losing air through the bead/wheel contact area.

CAUTION

Care must be taken to prevent the propellers from travelling over unprepared surfaces

d) Taxi Procedure Taxi procedure and speed are to be managed to operate the Aeroplane safely and smoothly. Only the minimum thrust/power above idle that is required should be used to accelerate to taxi speed from a stop. All turns, accelerations, and decelerations shall be carried out smoothly. Applications of thrust and braking shall be done smoothly. Applications of power shall be done so as to minimize the FOD hazard. At taxi speeds the Aeroplane is to be steered using the rudder pedals to control the nose wheel steering. Brakes may be used to assist nose wheel steering. Acceleration and deceleration during taxiing should be planned so as to minimize wear on brakes. When applying brakes to stop the Aeroplane, brake pressure should gradually be reduced as the Aeroplane slows to prevent it from lurching to a stop.

e) Taxiing Safety The safety of the Aeroplane during taxi shall not be jeopardized by other duties. Aeroplane checks may be done during taxi only when it is safe to do so. If necessary, the "Taxi Check, Before Take-off Check, and After Landing Check" should be delayed until it is safe to carry them out. Checks shall not be done while taxiing in a congested area. Particular care must be taken when completing checks while taxiing on any runway or helicopter landing area regardless of whether it is active or not. Radio communication is not permitted on other than the relevant aeronautical frequency whenever the Aeroplane is taxiing on or near any runway or helicopter landing area or in a congested area.

f) Taxi Check Once clear of any congested areas the Pilot may complete the taxi check. The expanded taxi check follows.

TAXI CHECK

Taxi Clearance	**OBTAIN**
Parking Brake	**RELEASE**
Brakes	**CHECK**

The brakes should be checked as soon as practical after the Aeroplane begins to taxi.

Flight Instruments **CHECK**

The Flight Instruments shall be checked for appropriate operation during turns of at least 90 degrees. The instruments to be checked include the following:

a) Magnetic Compass
b) HSI
c) Turn Coordinator + Inclinometer
d) Attitude Indicator

Wind Inputs **APPLY**

3.8. Run-up, Functional Checks, Systems Checks

The expanded Run-up, Functional Checks, Systems Checks follow.

RUN-UP CHECK

Parking Brake	**SET**
Fuel Selectors	**ON MAINS**
Mixtures	**RICH**
Throttles	**1500 RPM**
Props	**FEATHER CHECK**
Throttles	**2000 RPM**
Engine Gauges	**CHECK**
Suction	**CHECK 4.8”-5.2”**
Alternators	**CHECK**
Props	**EXERCISE**
Mixtures	**CHECK LEANING**
Magnetos	**CHECK**
Carb Heat	**HOT**
Throttles	**IDLE**
Oil Pressure	**CHECK**
Throttles	**1000 RPM**
Carb Heat	**COLD**

3.9. Before Take-off Check

[Two common methods of designing checks for completing the before take-off requirements are:
— a single check that is divided into two sections, one for items completed before taxiing into the take-off position, and the second for after taxiing into position;
— two separate checks a "Before Take-off Check" that is completed before taxiing into the take-off position, and a "Runway Check" that is completed after taxiing into position.
In this section, specify the checks and pilot action applicable to your operation. The example in this section is of single check with two sections.]

The Before Take-off Check down to the line should be completed by the Pilot approaching the take-off point. At congested Airports the Pilot may elect to only complete this check once in the lineup to depart or prior to taxiing. The initial part of the Before Take-off Check is normally carried out prior to requesting take-off clearance. The expanded Before Take-off Check follows.

BEFORE TAKE-OFF CHECK

Standby for Take-off **Cabin Secure**

It is necessary to establish contact with the Flight Attendant (FA) to ensure that the cabin is secure prior to take-off. Normally the public address system is chimed three times to about one minute before take-off to allow the FA to occupy their assigned station.

Flight Controls **Checked**
The Flight Controls are unlocked at this point. Care should be taken in strong winds.

Bleeds **OFF**
Complete down to the line

The check should be held at this point until Take-off clearance is issued by Tower ATC or until requested by the PF

ON

Turning the Landing Lights should be delayed until clearance for take-off has been received from the ATC Tower. If the aerodrome is not controlled by a

Before Take-off Check **Complete**

3.10. Line-up Check

Perform the following TILT check when “given” the runway, either in a “Line up and wait” call, or a takeoff clearance.

Time	**NOTE**

The time should be noted first as it requires more attention inside the cockpit. The rest may be accomplished as the aircraft rolls onto the runway

Ice – Pitot Heat	**ON**

The pitot heat should be selected ON regardless of OAT

Light - Landing	**ON**
Transponder	**ON/ALT**

Once aligned with the runway, perform one final instrument check

Heading	**CONFIRM RWY**
Altitude	**CONFIRM**
Horizon	**CHECK Level & Adjusted**

3.11. Take-off Procedure

a) General The following table describes the procedure to be used to carry out a normal take-off. It commences at the completion of the "Before Take-off Check" and ends immediately before the "After Take-off Check." Many of the actions described are to be carried out without specific direction. Flight Deck conversation other than as indicated in the following table should be avoided during the take-off procedure. Guidance on aborting a take-off is provided in the chapter that deals with Abnormal and Emergency Procedures. Diagrams pertaining to take-off procedures are found in chapter 10.

b) Turns after Take-off After take-off no turns are permitted prior to at least 400 feet above the departure end unless: required by ATC; for noise abatement; to prevent collision; part of a departure procedure that is required to clear obstacles. If a turn is appropriate after take-off the following limitations shall apply:

i) Turns are not permitted below 50 feet above the runway surface, before wheel retraction, or a speed of V_{YSE}, whichever occurs last.

ii) Between the conditions described in the paragraph immediately above and 400 feet above the departure end of the runway a maximum bank angle of 15^{o} is permitted.

iii) Higher than 400 feet above the departure end of the runway, a maximum bank angle of a rate one turn is permitted provided that the minimum speed is 1.3 V_s. If the speed is less than 1.3 $V_{YSE,}$ the maximum bank angle is 15^{o}.

c) Reduction from Take-off Power Power shall not be reduced from the Take-off setting until the Aeroplane climbs to a safe altitude, or 400 feet above the departure end of the runway whichever is higher.

d) Prior to each take-off the Pilot shall understand the Take-off procedure being utilized. Procedures that are standard as published in these SOPs need not be condidered in detail. Should it be necessary to amend the normal procedure as a result of the application of a supplement subsequent to a malfunction, that requirement shall be fully understood. The Take-off procedure shall include the following elements:

i) Take-off weight;
ii) Flap setting;
iii) If other than standard: Take-off power and Maximum Take-off Power (uptrim power);
iv) Speeds, V_1, V_r, V_2, V_{fri}, V_{climb};
v) Procedures if other than the aerodrome of departure is intended for recovery in the event of an emergency;
vi) Departure procedure;
vii) Climb profile.

Normal Take-off – Procedure

Pilot
When take-off power is set keep a hand resting lightly on top of the power levers in case it is necessary to abort the take-off.
When airspeed indicator begins to move **"Airspeed Alive"**
At 75 KIAS

Pilot
“Rotate” Rotate the Aeroplane at a rate of about 2° per second until achieving approx. 8° nose up. Achieve Blue Line speed
Do not exceed 109 KIAS
When a Positive Rate is achieved, confirm a climb on the ALT, VSI, and confirm at or above Blue Line airspeed **"Positive Rate Once, Twice, Blue Line, Gear Up"**
If a landing gear malfunction has occurred do not exceed 140 KIAS. Climb to at least 1000 ft AGL and refer to the appropriate abnormal procedure check.
Climb at Blue Line Speed. At a safe altitude that is at least 400 ft above the departure runway accelerate to 105 KIAS then: **“Set Climb Power”** (2500RPM, 25” MP)
Continue departure as briefed

3.12. Climb Procedures

a) General Normal climb is performed at 2500RPM, 25” MP and 105 KIAS. ATC requirements may dictate otherwise, however at no time shall the aircraft be operated in a climb below 88 KIAS.

Annex A to Chapter 3

NORMAL FLIGHT PROCEDURES DEPARTURE, ABBREVIATED CHECKLISTS

Introduction

The abbreviated form of the Departure checklists follow.

ENGINE START CHECK

Beacon	**On**
Mixture	**Rich**
Propeller	**High RPM**
Throttle	**Closed**
Fuel Pump	**On**
Throttle Advanced	**As Required**
Prop Area	**Clear**
Ignition	**Start**
Engine Instruments	**Monitor (Oil pressure and Temperature)**

ENGINE START CHECK More Complex Aeroplane

Engines	**Clear**
START SELECT Switch	**Select #2**
STARTER Switchlight	**Press**
Clock	**Start timing**
Condition Lever (___-___% N_H)	**START/FEATHER**
Fuel Flow	**Confirm**
ITT	**Indication within ___ secs**
Oil Pressure	**Indication**

NOTE

Minimum oil pressure by completion of engine spool-up during start is ___ PSI. If ___ PSI is not reached by end of spool-up engine must be shut down.

Hydraulic Pressure	**Indication**
Starter	**Cut out at approx ___% N_H**
Engine Stabilized	**Stabilized at approx ___% N_H**
Bleed Air	**#2 Bleed ON/MIN**

Repeat above to start No 1 Engine

Engine Start	**Complete**

POST-START CHECK

Left Fuel Selector	**CROSSFEED**
Annunciator Lights	**TEST**
Avionics Master	**ON**
HSI & RMI	**SLAVED**
GPS Database & CDI	**CHECK**
ATIS	**COPY**
Altimeter	**SET**
IFR Clearance	**OBTAIN**
Transponder	**STANDBY, CODE CONFIRMED**
VORs	**CHECK**
Avionics	**SET**
VLOC/GPS MODE	**SET**
IFR Departure Brief	**COMPLETE**
Left Fuel Selector	**ON MAIN**
Right Fuel Selector	**CROSSFEED**

TAXI CHECK

Taxi Clearance	**OBTAIN**
Parking Brake	**RELEASE**
Brakes	**CHECK**
Flight Instruments	**CHECK**
Wind Inputs	**APPLY**
Taxi Check	**COMPLETE**

RUN-UP CHECK

Parking Brake	**SET**
Fuel Selectors	**ON MAINS**
Mixtures	**RICH**
Throttles	**1500 RPM**
Props	**FEATHER CHECK**
Throttles	**2000 RPM**
Engine Gauges	**CHECK**
Suction	**CHECK 4.8”-5.2”**
Alternators	**CHECK**
Props	**EXERCISE**
Mixtures	**CHECK LEANING**
Magnetos	**CHECK**

Carb Heat	**HOT**
Throttles	**IDLE**
Oil Pressure	**CHECK**
Throttles	**1000 RPM**
Carb Heat	**COLD**

BEFORE TAKE-OFF CHECK

Standby for Take-off	(FA) **Cabin Secure**
Flight Controls	**Checked**
Bleeds	**OFF**
	Complete down to the line

Transponder	**ON/ALT**
LANDING & A/COL Lights	**ON/WHITE**
Altimeters	**Checked**
Compasses	**Set/Checked**
Before Take-off Check	**Complete**

Chapter 4. Normal Flight Procedures - Cruise

4.1. Introduction

This chapter of the SOPs, "Cruise", provides guidance for normal operations from and including the level-off at top of climb, through to but not including the before descent activities.

4.2. Cruise Check

The Cruise Check is to be done only if an After Take-off Check has been completed. If an After Take-off Check has not been completed, as would occur for a short flight, a Downwind Check is to be done, and the Cruise Check omitted. Upon reaching the target cruising altitude the Pilot shall make the required ATC level call and allow the Aeroplane to accelerate to the planned cruise speed and complete the Cruise Check as follows.

CRUISE CHECK

Power	**Set**

Set the appropriate cruise power for the temperature, altitude and planned cruise profile.

NOTE

It may be necessary to reset the engine power after the Aeroplane speed has stabilized.

Altimeters	**Checked**
Pressurization	Checked

Confirm sufficient fuel for the planned flight. If appropriate begin a fuel log.

Cruise Check	Complete

4.3. Engine Management

After the Aeroplane is established in cruise the Pilot should compute the following engine power settings. The settings should be placarded

a) Maximum Cruise Power;
b) Maximum Continuous Power.

4.4. Periodic Checks

Periodically during cruise, but no less than once per hour, the pilot shall carry out a visual check of the displays and controls on the flight deck. Should an inappropriate condition be found the applicable action shall be taken. Should a significant change in atmospheric conditions have occurred since the last check, the engine power settings described in the Engine Management section should be recomputed.

4.5. Navigation

[It is not possible for us to make very detailed recommendations about standard procedures for navigation. The subject has too many variables. However, we have indicated a few subject areas that you may wish to address for your operation.]

a) General To the extent practical all available navigation equipment should be set to provide navigation information. Guidance for use of RNAV systems is found in the next section.

b) Navigation Displays [Information on set-up of Navigation Displays is found in Chapter 1. Additional guidance for the en route phase of flight may be inserted here.]

c) Compass Setting Procedures [In this sub-section discuss the following as it applies to your operation.

i) If the compass system on your Aeroplane is not magnetically synchronized, insert the setting procedures for en route flight.
ii) If you operate into the Northern Domestic Airspace (area of compass unreliability) discuss the compass setting and astro navigation procedures here.]

4.6. FMS/GPS/INS/RNAV Procedures

[If the Aeroplane type that the SOPs refer to is not equipped with an RNAV system do not include this section.]

[The requirements for use of RNAV (which includes the use of FMS, GPS, and INS) is specified in areas of the CARs standards other than those that pertain to the SOPs.]

[In this section describe the RNAV procedures that are applicable to your: type of Aeroplane, operation, company policy. Include (if applicable) any route offset procedures.]

a) General [Insert relevant general company policy statements on use of RNAV during the en route phase of flight – a sample follows.] During the en route phase of flight RNAV equipment is to be used to the extent practical to minimize flight time and generally improve the efficiency of the operation.

b) Navigation and Display As the best check of an RNAV system's performance is another RNAV system, where two or more systems are available, they should be used to verify the performance of each other. To the extent practical, without interfering with the operation of the RNAV systems, the remaining NAVAIDS should be selected to provide additional position information. .

c) Routing Changes When a change of routing is required, the following procedure should be followed.

i) The Pilot should enter the route into the RNAV system.
ii) At each stage of the entry process the pilot should verify that data has been entered correctly. To the extent possible, the reverse path verification procedure described in the Departure chapter should be used. Waypoints that have been previously verified since the last data base entry need only be checked to confirm that the correct waypoint has been selected. Only once the routing has been verified is navigation using the RNAV permitted.
iii) The second RNAV should be programmed the same as the Pilots. If possible, the data should be transferred electronically rather than manually.
iv) Should a significant period of time be necessary to complete the programming, ATC should be notified of any delays due to programming.

4.7. Holding Procedures – En Route

a) Aeroplane Configuration [Specify the procedure that applies to your type of Aeroplane for hold during the en route phase of flight. Include such information as: speed, flap setting, engine power, and icing considerations.]

b) Navigation [In this sub-section discuss set-up of navigation aids (in particular RNAV systems].

Annex A to Chapter 4

NORMAL FLIGHT PROCEDURES CRUISE, ABBREVIATED CHECKLISTS

[The following is an example only. Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook.]

Introduction

The abbreviated form of the Cruise checklists follow.

CRUISE CHECK

Power	**Set**

NOTE

It may be necessary to reset the engine power after the Aeroplane speed has stabilized.

Altimeters	**Checked**
Pressurization	**Checked**
Fuel	**Checked**
Cruise Check	**Complete**

Chapter 5. Normal Flight Procedures - Arrival

5.1. Introduction

This chapter of SOPs, "Arrival" provides guidance for normal operations from and including the before descent activities through to and including shutdown of the power plants at the completion of the flight. Included in this chapter are procedures for missed approaches with the Aeroplane operating normally.

5.2. Descent Check

The purpose of the Descent Check is to transition from cruise flight to the descent in preparation for arrival. In order to address some of the items that were affected during the After Take-off check, the Descent Check shall be completed any time that an After Take-off check was done. A Descent Check, therefore, need not be done for short flights where a "Downwind Check" is to be done. The Descent Check is ideally completed before commencing the first descent from cruising altitude. Depending on circumstance, it may be appropriate to carry out some of the descent before completing the descent check. For example, a very early, but small, descent initiated by ATC to facilitate traffic flow would not necessarily trigger the Descent Check. However, the Descent Check must be done in sufficient time to permit completion of the remaining checks before landing. The expanded Descent Check follows.

DESCENT CHECK

Pressurization **Set**

Set cabin pressurization controller to destination altitude and altimeter setting. Check cabin rate at default setting or select computed descent rate if required.

Landing Data **Computed & placarded**
Approach Review Procedure **Complete**

The format in the section titled **Approach Review Procedure** should be used.

Passenger Briefing **Complete**

The format in the section titled Passenger Briefing shall be used for this briefing.

Descent Check **Complete**

5.3. Approach Review Procedure

[In the following example we have used the AMORTS format as a guide for review. For your operation use whatever meets your requirements. If you choose to use the AMORTS format, note that you should make modifications to the following guide to suit your operation. Whichever format you choose, it should be standardized throughout your operation.]

[To the extent practical the Approach Review Procedure should be concise. It is not necessary to review standard items and procedures. The items that should be included in the Approach Review Procedure are those that change routinely (ie., speeds that change with weight) or items that are normally standard but are different for this particular approach (ie, a higher than normal approach speed category due to icing). Depending on the circumstances and the type of Aeroplane, the Approach review Procedure may be very simple or quite complex. In setting a company policy for Approach Procedure Review, consider that short simple reviews are more likely to be understood and remembered than ones that are long and complex but very complete.]

i) General Prior to each approach and landing, the pilot shall review the critical aspects of the procedure. If possible, the autopilot should be used during the Approach Procedure Review. During the actual approach, the pilot to compare the procedure as it is flown to the what was reviewed.

ii) Format Approaches should be reviewed using the format described in the following paragraphs. The format is known by the acronym "AMORTS"; the letters of which are taken from the first letter of each of the topics that make up the briefing format. If a particular item is not applicable to the procedure to be flown, it may be indicated as not applicable, ie, for a visual approach brief "Timing is not applicable." In all cases, each item should be addressed. Where a topic contains several items or choices, the order of briefing should be in the same order as that shown. Examples are shown in brackets "( )."

a) Approach Choose from the following:

i) Procedure to transition from en route flight (STAR, Profile Descent Procedure, IFR Descent to VMC, Radar vectors, Full Procedure, Straight-in; Circuit joining procedure);

ii) Type of approach, (NDB RWY 08, Contact Approach to RWY 36, VFR Circuit to RWY 25, Visual Approach to RWY 23, GPS RWY 16 Circling to RWY 22);

iii) CAP page(s) that the procedure(s) is/are found on (DALLY SEVEN Arrival on page 14, to a CONVERGING ILS RWY 34 on page 24);

[If your organization uses a Terminal Flight Procedures Publication other than the CAP or if you permit individual pages to be removed from the CAP, it may be useful to include the effective date of the page. If your organization uses whole volumes of the CAP, it may be better to brief which pages are applicable rather than the effective date.]

iv) Use of Autopilot and/or Flight Director, or raw data;

b) Minima Specify the following:

i) For an instrument approach, any minimum altitude after the FAF or intercept of the final approach track up to the MAP/MAWP, including the temperature correction, (MDA, DH, Step-down fix crossing altitude);

ii) For an instrument approach, only those altitudes other than those specified above that a temperature correction has been applied to;

[Although there may be some advantage to stating other altitudes, it may be outweighed by increasing the length and complexity of the briefing. In an ever more complex environment the number of designated altitudes that may apply during an arrival is increasing, therefore, we recommend reviewing of the altitudes specified above.]

iii) The altitude to be set into the altitude alerter/reminder [if applicable];

iv) The Radio Altimeter alert/warning/decision height;

v) For a visual approach or for a VFR circuit, specify the Circuit Altitude or any other relevant altitude.

[Overshoot Understand the following:

vi) The missed approach procedure to be flown (as published/as directed by ATC, VFR to the circuit, detailed briefing).

[In most cases the missed approach procedure review should be very short. If the procedure is published on the approach chart and the pilot is familiar with it, a short review as published is quite acceptable. Similarly, a missed review of VFR to the circuit is often adequate. If the missed approach is complex and/or the pilot is unfamiliar with it, a detailed review should be done.]

vii) Engine power settings and Aeroplane handling to be used if other than standard.

[If the engine and Aeroplane handling is standard during a missed approach it is not required to review anything for handling. If power settings change with altitude and temperature then the applicable settings should be reviewed.]

c) Radios Understand the radio set-up to be used during the approach. Note that actual set-up and identification of NAVAIDS should not be carried out during the approach procedure review. Specify the course and/or heading settings to be set on the relevant indicators.

d) Transition and Timing Understand the transition altitude that altimeters are to be changed from Standard Pressure to Local Station Pressure. Understand the timing to the missed approach point if it is applicable for the approach to be flown.

e) Speeds and Supplementary information Choose from the following:

i) Approach weight;

ii) Flap setting for approach and landing, (include type of landing if applicable, ie., short field technique);

iii) V_{app};

iv) V_{ref}

v) V_2 or $V_{go\ around}$;

vi) V_{fri} or applicable flap retraction speed for missed approach (if not standard);

vii) V_{climb}, V_{sse}, V_{xse}, V_{yse}, or as applicable;

viii) Circling procedures;

ix) Special Circuit procedures;

x) Ice protection procedures;

xi) Any special considerations or other relevant remarks.

f) Sample Instrument Approach review The following is a sample of a review for an instrument approach as understood by the pilot who will fly the approach.

"This is to be a Profile Descent Runway 06 Left and Right on page 224, then radar vectors or direct to the NORTH Initial Approach Waypoint for a GPS Runway 06 Left, with circling to Runway 33 found on page 230. I will use the autopilot until the Intermediate Waypoint. Then, I will hand

fly the remainder of the approach and circling procedure using the Flight Director. I will use a temperature correction for -10°C. For the Step-down along track distance fix a correction of 40 ft gives a minimum altitude of 880 ft. For the MDA the correction is 20 ft for minima of 640 ft which set on the altitude reminder. Set the Rad Alt to 270 ft. The overshoot, if required will be as published or as directed by ATC using ___% power and ___% flap. The GPSs will both be set to the GPS Runway 06 Left when they are no longer needed for en route. The ILSs are off the air, so set the VORs primary frequency to 115.55 and secondary to the alternate 112.3. The NDBs are also off the air so set them to the alternate 250. Transition is at 18000 ft. Timing is not applicable. The approach weight is _____ LBS. I will circle at ___% Flap. Once on final I will select full flap for landing. V_{app} is _____. Ie will use V_{ref} of _____ for circling and final. $V_{go\ around}$ is ____, V_{fri} is ____, and V_{climb} is _____. As directed by ATC I will cross over the centre of the airport and circle right for Runway 33. The ice protection systems will be selected on during the "In Range Check" and due to possible icing the propellers will be set to max prior to the Final Approach Waypoint.

e) Sample Visual/Contact Approach Review The following is a sample of a review for a visual approach that has a published procedure. A review for a contact approach or a visual approach without a published procedure will be similar.

"This will be a SANDHEADS VISUAL Approach to Runway 08 found on page 119. I will use the autopilot until on final then I will hand fly. Altitudes are as published. The overshoot if required will be VFR to the circuit, using ___% power and Flap ___. Max power if required will be _____%. The VORs should be set to the Localizer/DME 109.5. No transition or timing. This will be an _____ LB, ___% Flap landing. V_{app} is ____. V_{ref} ____. V_2 is ____. V_{yse} is _____.

f) Sample VFR Circuit Review The following is a sample of a review for joining and landing from a VFR circuit.

"This will be a right hand VFR Circuit as published for Runway 16. I will join on downwind. I will hand fly approaching the circuit. The circuit altitude is 1500 ft. The overshoot if required will be VFR back to the circuit, using standard power and configuration. For radios: switch to the MF at 15 miles, set the GPS direct to the threshold Runway 16. No transition or timing. This will be a _____ LB, ___% Flap landing. Speeds are standard.

5.4. Passenger Briefing

[Although the Passenger Briefing requirement has been listed in the Descent Check, depending on your operation, it may be more appropriate to include it in the In-Range Check. Specify which crewmember is to complete the passenger briefing as well as items that should be included. Additional guidance on the contents of passenger briefings is available in the CARs and related standards, as well as from your Transport Canada regional office.]

a) The pre-arrival passenger briefing should be completed before the Descent Check. Confirmation of completion is an item in the Descent Check. The briefing is to be carried out by the Pilot [or if applicable by the FA with input from the pilots] and should include (but not be restricted to) the following items:

i) Phase of flight;

ii) Approximate time to landing and arrival at the terminal;

iii) Weather at the destination and, if applicable, during descent;

iv) Requirement to fasten safety belts;

v) Requirement to place seat backs in the upright position [delete if your Aeroplane seats do not recline];

vi) Requirement to stow trays/tables or place them in the upright position (if applicable);

vii) Requirement to stow all carry on baggage;

viii) Confirmation that smoking is not permitted;

ix) Emergency exits location (if applicable) [Briefing the location of the emergency exits during the pre-arrival briefing is not usually required. Check the CARs and Standards for applicability.];

x) Wearing of outdoor clothing during arrival (if appropriate in the expected weather conditions); and

xi) Requirement for escort while walking on aprons (if applicable).

b) An example of pre-arrival briefing follows:

"Good afternoon I'm Pilot Pilot. We will be commencing descent for arrival at Somewhere shortly and expect to land in fifteen minutes. We should arrive at the terminal a few minutes later. The weather at Someplace is overcast, light snow, visibility of 10 KM, temperature of -25^{o}C, and a wind from the northwest at 20 KM/H. We expect light turbulence and icing during descent. You may hear some pieces of ice hitting the fuselage as it sheds from the propellers; this is completely normal. The seat belt light will be turned on in a few minutes. At that time please fasten your seat belts and leave them fastened until the Aeroplane comes to a complete stop at the terminal. Also stow your table trays and carry on baggage, and place

your seat backs in the upright position. I must remind you that smoking is not permitted on this flight. Please note the emergency exits at the left front of the Aeroplane and over the wings. Their use is described in the Aeroplane safety features card in front of you. Due to the inclement weather, we recommend that you wear your outdoor clothing during arrival. For your safety and security please wait for a crew member to escort you to the terminal building. We hope you have enjoyed your flight. Thank you.

5.5. Descent Procedures

[In this section insert the details of the descent procedure (or procedures if there is a choice of more than one) for your type of Aeroplane and the attendant coordination.]

a) General The use of all three types of descent profiles described in the flight manual are approved for normal use. In most cases a type 2 profile will be most advantageous. This information must be used with the guidance provided in the sections that discuss Approach Procedures.

[The specific procedures for descending through FL100/10000 ASL will vary depending on your operation. Notifying the FA that the Aeroplane has descended through 10,000 ft unpressurized is not a requirement, but is probably a good idea. The following example is for a pressurized Aeroplane.]

b) FL100/10000 ASL Upon descending through FL100/10000 ASL the following pilot actions shall be carried out.

c) Interrupted Descent It will sometimes be necessary to interrupt the descent for traffic, weather, or other reasons. Regardless of the anticipated duration of the interrupted descent sufficient power is to be set to maintain sufficient speed during level flight. Speed limitations in controlled airspace may be found in the AIP. For an extended interruption in descent, the Aeroplane should be set to cruise configuration until descent is continued.

Descent Through FL100/10000 ASL Procedure

PF
Descending through FL100/10000 ASL confirm the altitude alert and flight guidance settings: – Check "Through 10000 (or FL100) for target altitude (ie,. 8000 or FL080), Altitude Select." – "Check, Lights ON, Pressurization

Checked."

5.6. Holding/Shuttle Procedures – Arrival

a) General The discussion in this section pertains to holding and shuttle procedures during arrival. Instrument Approach considerations are found later in this chapter. However, much of the information on holds and shuttles that applies to arrivals in general, applies as well to instrument approaches.

b) Aeroplane Configuration [Specify the procedure that applies to your type of Aeroplane for a hold or shuttle during arrival. Include such information as: speed, flap setting, engine power, and icing considerations. An example follows.] During a hold or shuttle, use a target holding speed of _____ KIAS and flap setting of ___%. A power setting of about ____% will be required. To minimize fuel burn, a constant power setting should be used and the speed allowed to vary slightly during turns. Should icing conditions be encountered, the normal ice protection procedures should be followed and a speed of ____ KIAS should be used with zero flap. If the speed for inflight icing is in excess of the maximum speed published for the hold/shuttle, hold at the maximum hold/shuttle speed and exit icing conditions as soon as possible or, if possible, obtain clearance from ATC for higher speed. Plan flight so as to enter the holding/shuttle procedure at no more than the maximum permissible speed.

c) Operational Considerations If the purpose of the hold is to wait until commencing an approach, ensure that sufficient fuel is available and that the weather is satisfactory for the planned procedure. If either is unsuitable, proceed to an alternate destination. If fuel and weather are suitable, consider reducing speed prior to entering the hold if a fuel saving can be realized. Note that a speed reduction while flying in controlled airspace may require approval from ATC. See the AIP for speed change limitations.

5.7. In-Range Check

[Although we have titled this section as "In-Range Check", the title is largely arbitrary. Use whatever best suits your operation and Aeroplane. In designating items for the In-Range Check consider the desirability of completing items as early as possible to minimize the Before Landing Check when the workload is likely to be higher.]

The purpose of the In-Range Check is to transition from initial descent to operations in the destination terminal area in preparation for approach. In order to address some of the items that were affected during the After Take-off check, the In-Range Check shall be

completed any time that an After Take-off check was done. An In-Range Check, therefore, need not be done for short flights where a "Downwind Check" is to be done. The In-Range Check is ideally completed before commencing an Instrument Approach. For a Visual Approach, Contact Approach, or VFR Circuit, the In-Range Check should be completed 15 to 30 NM or 10 to 15 minutes from landing. [The distances and times mentioned in the previous sentence should be adjusted to suit your Aeroplane and operation.] At the completion of the In-Range Check the cabin and passengers should be secured for landing. The expanded In-Range Check follows.

IN-RANGE CHECK

Ignition **a/r**

Ignition may be set to NORMAL or MANUAL at the Pilots discretion. It must be set to MANUAL for flight in any icing, heavy rain, or moderate or greater turbulence.

FASTEN BELTS Lights **ON**
Harnesses **Secure**

If without a FA, the Pilot shall visually confirm the security of cabin and passengers' harnesses.

Altimeters **Set**
In-Range Check **Complete**

5.8. Downwind Check

a) General The Downwind Check is to be done on short flights between nearby aerodromes or during some training flights. A Downwind Check is only to be done whenever an After Take-off Check and the Cruise Check have not been done. More specifically the Downwind Check replaces the following checks: After Take-off, Cruise, Descent, In-Range. It must be done prior to the Before Landing Check. The Downwind Check should be completed at approximately the following points of various types of short flights:

i) upon reaching the altitude for transit on a short flight between two nearby aerodromes;
ii) upon turning onto the downwind leg for circuits (normally during a training flight);

iii) prior to commencing an instrument approach procedure on a local flight;

iv) prior to commencing another instrument approach at the same aerodrome after a missed approach from a previous procedure.

b) Expanded Check The expanded form of the Downwind Check follows.

DOWNWIND CHECK

Autofeather	**Off**
Bleeds	**ON**
Approach review	**Complete**

See the section on approach review for the required content.

Downwind Check	**Complete**

5.9. Before Landing Check

[The contents of the Before Landing Check obviously must be tailored to the individual type Aeroplane. In developing it consider whether all of the items that need to be completed can be addressed without a substantial break in the check. It may be appropriate to develop a separate Final Landing Check to address items that should be delayed until the last part of the approach or until landing is assured. This section and the next are examples for an Aeroplane that is best operated with two such checks. In most cases, it would be preferable to actually do such items as extending the landing gear and flaps during this check. However, we recognize that for some Aeroplane it is necessary to carry out some actions separately, then confirm that they have been done during the Before Landing Check. The following example is for a check done from memory. This is not mandatory. In your operation it may be more appropriate to refer to the checklist.]

Direction as to when the Before Landing Check is to be done is contained in the applicable sections that discuss the various types of approaches. The Before Landing Check is the first of two checks that are used to configure the Aeroplane specifically for landing. As this check may be done during an especially high workload period of the fight, it is to be carried out from memory. The expanded Before Landing Check follows:

- **BEFORE LANDING CHECK**

Landing Gear Lever	**Down**
Synchrophase	**OFF**

Propellers **___% or Max**

Use ___% for most landings. Use Max: if turbulence or wind shear is a consideration; if a missed approach is likely; or for landing using minimum runway length. Propellers are to be set to ___%.

Flaps **Approach Selected or Up**

The check shall be held until flaps are selected unless a flapless landing is planned. If flapless landing is planned the Pilot would continue with the check.

Warning/Caution Panel **Checked**

Check that no new indications are displayed on the Warning/Caution Panel

Landing Gear **Down and Locked**

Before confirming that the landing gear is down the Pilot shall check the following indications: 3 green "DN" annunciator lights are illuminated; the amber "DOOR" annunciator lights are out; and the amber lights in the gear selector handle are out.

Flaps **Approach Set**

Before Landing Check **Complete**

5.10. Final Landing Check

[Like the Before Landing Check, the Final Landing Check contents must be tailored to the individual type of Aeroplane. It may not even be appropriate for your Aeroplane to have such a check. Such a check would typically be useful if your Aeroplane:
- sometimes (or always) requires the deployment of additional flap only once landing is assured;
- requires a last check that the landing gear is safely extended just before landing;
- requires that engine bleed air or a heating/cooling system be turned off immediately before landing or missed approach; and/or
- requires a change to propeller setting once landing is assured.]

a) General The Final Landing Check is the second of two checks that are used to configure the Aeroplane specifically for landing. As this check may be done during an especially high workload period and at a time when flight deck lighting may be subdued to reduce glare, it is to be carried out from memory. It is normally commenced at the following points of various types of approaches after the Before Landing Check has been completed.

g) For Visual Approaches, Contact Approaches, and VFR Circuits, between 1,000 and 500 feet above landing.

viii) For Category I Precision Approaches and all Non-Precision Approaches, immediately after the "100 Above" point.

ix) For Category II or III Precision Approaches, between 1,000 and 500 feet above landing.

b) Expanded Final Landing Check The expanded Final Landing Check follows:

FINAL LANDING CHECK

Bleeds **OFF**
The bleeds must be selected off as the SAMPLE Aeroplane is not approved for landing or go around with the bleeds on.

Flaps **Approach/Land Selected or Up**

At the Pilots direction, the Flaps are to be selected to Land. For landings where no change in flap setting is to be carried out, the Pilot does not change the setting but does confirm that the selection is correct.

Flaps **Approach/Land Set or Up**

Final Landing Check **Complete**

5.11. Approach Procedures – General

a) The discussion on approach procedures is divided into areas which discussed within the next few sections. For the SOPs, "Approach" is essentially from the latter part of the descent from en route flight to, but not including, the final manoeuvring for and the actual landing. The discussions on landings are in separate sections. The sections of discussion for Approaches are:

i) Instrument Approach Procedures Initial/Intermediate;

ii) Instrument Approach Procedures Intermediate/Final;

iii) Circling Procedures;

x) Contact/Visual Approaches and VFR Circuits; and

xi) Missed Approaches.

[The intent is to provide crews with sets of tools that can be picked from to meet changing requirements through the arrival process.]

b) Common Procedures The following procedures are common to most approaches:

i) In most cases navigation equipment should remain set for en route navigation
until the following. Then navigation equipment should be set for the approach procedure to be flown.

A) Navigation equipment should be selected from the en route requirement to the approach requirement upon first receipt of an ATC vector for arrival.

B) Upon beginning a STAR or Profile Descent, select the navigation equipment as required for the procedure. Set other equipment for the approach to be flown.

C) Upon receiving clearance for an instrument approach, set navigation equipment for the instrument approach to be flown.

ii) When operating in controlled airspace do not arm Flight Guidance equipment until actually receiving clearance for the procedure. However, it is recommended that the expected procedure be pre-selected in standby status awaiting clearance from ATC.

iii) When flying a published procedure that includes minimum and/or maximum altitudes, it is recommended that the next published altitude be pre-selected in stand-by status awaiting acquisition.

iv) To the extent practical the next communication frequency that is expected to be used should be in standby.

c) (ref. CARs) Ensure Aeroplane speed does not exceed 250 KIAS below 10000 ASL, nor 200 KIAS below 3000 AGL within 10 NM of a controlled airport.

i) Instrument Approach Procedures in VMC Often, all or part of an Instrument Approach Procedure is flown in VMC. During instrument

approaches in VMC the PNF must be especially vigilant in searching visually for other traffic.

5.12. Instrument Approach Procedures – Initial/Intermediate

a) General This section provides guidance for instrument approach procedures up to and including the following (depending on the circumstance):

i) the last vector to final approach, but not including the turn onto the instrument approach procedure final track or the last track to the FAF;

ii) the last heading prior to turning on to the instrument approach procedure final track or the last track to the FAF (from a procedure turn, arc, feeder/transition, or part of a STAR);

This section is divided into subsections that discuss various actions and Aeroplane configurations for several types of arrival procedures. Where applicable, further distinction is made for different types of navigation equipment. It must be used with the section that deals with descent procedures.

b) Standard Procedures General Other than as noted in this subsection and the next one that deals with altitude, no additional calls to those described in the "General" chapter are required during the Initial/Intermediate Approach phase. To reduce the likelihood of overshooting a desired track during any arrival procedure the Pilot should proceed as follows:

i) When approaching a track which will be followed using primarily the track bar display, on initial movement of the track bar away from full deflection with the warning flags out of view, the Pilot should note "Track Bar is alive."

ii) When approaching a track which will be followed using primarily a bearing display, the Pilot when the display indicates that the Aeroplane is 10^{o} away from the desired track be prepared for the intercept.

iii) To reduce the likelihood of overshooting a desired vertical path during the Initial/Intermediate Approach phase, the Pilot actions will be as follows:

a) When approaching a VNAV computed descent path on initial movement of the vertical path indicator away from full deflection with the warning flags out of view, the Pilot should note "VNAV is alive" and prepare to intercept.

d) Standard Procedures – Altitude For the most part, the directions for altitude related calls that are described in the "General " chapter apply. However, some additional situations are likely to occur during the Initial/Intermediate Approach phase. Guidance follows:

(i) If ATC changes the target altitude before the Aeroplane reaches it, the pilot should proceed as follows:

(A) The pilot who responds on the radio to the Air Traffic Control initiated altitude should make the applicable change to the Altitude Alert System. [Delete the next information if your Aeroplane is not appropriately equipped.] The pilot who responded on the radio shall also appropriately arm the Flight Guidance System. The pilot making the change shall not do so if the Flight Guidance system is in the process of capturing an altitude. It is necessary to wait until capture is complete, then the new altitude is to be selected

e) STARs and Profile Descent Procedures For STARs or Profile Descent Procedures ensure that ATC has specified a clearance limit or approach that terminates the procedure. This information is required in the event of a communication failure. If vectors are expected to transition to the approach see the subsection on ATC Vectors. If vectors are not expected (the STAR or Profile Descent terminates at the beginning of an approach) see the applicable subsection. The following are recommended for flying a STAR or Profile Descent.

[Insert the Aeroplane configuration that applies to your operation either as a requirement, a recommended profile, or an approximate configuration. If the profile is adequately described in the descent section then merely refer to it in this subsection. If STARs and Profile Descents require special procedures also detail them here. In developing them consider the following items:

- Aeroplane speed;
- Engine and/or propeller settings;
- Landing Gear position;
- Flap setting;
- Icing considerations;
- Speed brake or spoiler setting.]

i) [insert applicable configurations]

f) ATC Vectors Ensure that ATC has included a clearance limit or approach that the Aeroplane is being vectored to. This information is required in the event of a communication failure. If vectors are to other than final approach (an IAF/IAWP, IF/IWP, Fix/Facility for a procedure turn) refer to the applicable subsection and configure the Aeroplane appropriately. Once advised that the Aeroplane is being vectored for approach carry out the following:

[Insert the Aeroplane configuration that applies to your operation either as a requirement, a recommended profile, or an approximate configuration. If the profile is adequately described in the descent section then merely refer to it in this subsection. If operations during vectors require special procedures also detail them here. In developing them consider the following items:

- Aeroplane speed;
- Engine and/or propeller settings;
- Landing Gear position;
- Flap setting;
- Icing considerations;
- Speed brake or spoiler setting.]

i) Carry out the In-Range Check at [insert the approximate point, distance from landing, or time from landing that the In-Range Check should be done.]

ii) During vectors, carry out the actions required so that the Aeroplane is appropriately configured when it turns on to final approach. Configure the Aeroplane as follows:

iii) [insert applicable configurations]

g) Holding Patterns, Procedure Turns, Shuttles The following applies for flying a Procedure Turn as part of an Instrument Approach. Holding Patterns and Shuttles when part of appro&aches can, for the most part, be treated a in manner similar to Procedure Turns. Additional guidance is available in a previous section that deals specifically with holds and shuttles.

[Insert the Aeroplane configuration that applies to your operation either as a requirement, a recommended profile, or an approximate configuration. If the profile is adequately described in the descent section then merely refer to it in this subsection. In developing procedures for procedure turns consider the following items:

- Aeroplane speed;
- Engine and/or propeller settings;
- Landing Gear position;
- Flap setting;
- Icing considerations;
- Speed brake or spoiler setting;

- Timing procedures, including which crew member(s) should carry out timing.]

i) Complete the In-Range Check prior to beginning the Procedure Turn.

ii) When timing is used for navigation during a procedure turn, use any other equipment available (DME, RNAV/FMS/GPS) to assist in determination of Aeroplane position.

iii) During the Procedure Turn carry out the actions required so that the Aeroplane is appropriately configured when it turns on to final approach. Configure the Aeroplane as follows:

a) [insert applicable configurations]

h) Non-RNAV Initial/Intermediate Approach Procedures other than Procedure Turns
This subsection deals with Initial/Intermediate Approach Procedures that are not RNAV based, where a Procedure Turn will not be flown (whether a Procedure Turn is published or not). Further, this discussion is for pilot navigated procedures as opposed to ATC vectored procedures. The following guidance applies:

[Insert the Aeroplane configuration that applies to your operation either as a requirement a recommended profile or an approximate configuration. If the profile is adequately described in the descent section then merely refer to it in this subsection. In developing procedures for Non-RNAV Initial/Intermediate Approaches without procedure turns or vectors, consider the following items:

- Aeroplane speed;
- Engine and/or propeller settings;
- Landing Gear position;
- Flap setting;
- Icing considerations;
- Speed brake or spoiler setting;
- Timing procedures (if applicable), including which crew member is to carry out timing.]

i) Complete the In-Range Check before crossing the first fix that is part of the Instrument Approach Procedure. This may be either the IAF or the IF.

ii) When timing is used for navigation during the procedure, use any other equipment available (DME, RNAV/FMS/GPS) to assist in determination of Aeroplane position.

iii) During the Initial/Intermediate Approach carry out the actions required so that the Aeroplane is appropriately configured when it turns on to final approach. Configure the Aeroplane as follows.

a) [insert applicable configurations]

i) RNAV Non-GPS Initial/Intermediate Approach Procedures [TO BE ADDED LATER]

j) GPS Initial/Intermediate Approach Procedures [TO BE ADDED LATER]

5.13. Instrument Approach Procedures Intermediate/Final

[The information in this section applies to Aeroplane which are routinely flown from the pilot or co-pilot seat with the pilot that flies the approach as the same one who carries out the landing. If your operation uses a different procedure then some modification to this section will be required.]

a) General This section on Instrument Approach Procedures Intermediate/Final, applies to the portion from the turn onto the Final Approach Track or the turn on to the last track to the FAF, until one of the following:

i) the Aeroplane commences manoeuvring visually for a straight-in landing;

ii) the Aeroplane commences circling; or

iii) the Aeroplane commences a missed approach.

b) Common Procedures Flight Guidance and Altitude Alert The use of the Flight Director and Autopilot are recommended to reduce workload during approaches in busy terminal areas and during poor weather. The Altitude Alert is to be used to the extent practical to reduce the possibility of occupying an inappropriate altitude during the approach. When no longer required to steer the Aeroplane, the heading reminders/bugs should be set to the first heading to be used in the event of a missed approach. When no longer used during the approach, the Altitude Alert should be set to the first altitude that the Aeroplane is to be levelled at in the event of a missed approach.

c) Standard Procedures – General During the Intermediate/Final Approach phase some additional procedures are required to those described in the "General" chapter. These additional procedures are described in this subsection and the next one that deals with altitude.

i) To reduce the likelihood of overshooting a desired track during the Intermediate/Final Approach phase, the Pilot should note when approaching a track that will be followed using primarily the track bar display. On initial movement of the track bar away from full deflection with the warning flags out

of view, the Pilot should confirm the movement and intercept the desired track.

ii) When approaching a track which will be followed using primarily a bearing display, the Pilot should note that the Aeroplane is 10^{o} away from the desired track and prepare to intercept.

iii) To reduce the likelihood of overshooting a desired vertical path during the Intermediate/Final Approach phase, On initial movement of the vertical path indicator away from full deflection with the warning flags out of view, the Pilot should note "VNAV is alive" and prepare to intercept.

iv) When approaching an ILS or MLS Glide Path, on initial movement of the Glide Slope indicator away from full deflection with the warning flags out of view, the Pilot should note "Glide Slope is alive" and prepare to intercept.

Altitude, Required Visual Reference, DH, MDA, Go-Around

a) Glide Path For a Precision Approach, upon crossing the FAF, the Pilot shall check the barometric altimeter against the published Altitude of the Nominal Glide Path at the FAF. It should be noted that several factors may cause the indicated and published height of the Glide Path at the FAF to differ by several hundred feet.

b) 100 feet Above Specified Altitudes When approaching any of the following altitudes inside the FAF, the Pilot shall prepare as the Aeroplane reaches 100 feet above the altitude.

i) Minimum Altitude at a Step-down Fix;

iii) Minimum Altitude at a Facility;

iv) Minimum Descent Altitude (MDA) for a Non-Precision Approach;

v) Decision Height (DH) for a precision approach.

vi) Upon descending to within 100 feet of the above-listed altitudes the Pilot should call or mentally note "100 Above."

c) Minimum Altitude at a Step-down Fix or Facility Where there is a published minimum altitude for crossing a step-down fix and/or facility that is inside the FAF the Pilot shall note mentally when the Aeroplane reaches it, as with the 100 feet above calls.

i) Required Visual Reference – General Once the Pilot assesses that Required Visual Reference is available, the Pilot should transition to the visual environment buy being aware of the DH or at the MDA .

ii) "Landing" Once the Pilot confirms that Required Visual Reference is available the Pilot should confirm that the Aeroplane is in a position to continue for landing.

iii) "Go Around" If landing is inadvisable (due to an obstructed runway, inappropriate Aeroplane position, or other reason), the Pilot should "Go Around" and advise ATC.

d) Decision Height Upon arriving at the Decision Height of a Category I Precision Approach, the following procedure/decision shall be made depending on the circumstance:

i) If the required visual reference is available the Pilot should then carry out the procedures described in the Landing or Missed Approach areas of this chapter.

ii) If the required visual reference is not available the Pilot should then carry out the procedures described in the Missed Approach area of this chapter.

Note that for Instrument Approach Procedures using a glide path but which terminate in a circling manoeuvre, the Standard Calls and Responses for Minimum Descent Altitude and Circling are to be used. An exception is that if required visual reference is not available when the Aeroplane descends on the glide path to the MDA, the MDA may be maintained to the Missed Approach Point.

e) Minimum Descent Altitude Upon arriving at the Minimum Descent Altitude of a Non-Precision Approach the following calls shall be made depending on the circumstance:

i) If the required visual reference is available the Pilot should then either "Landing" or "Go Around."

ii) If the required visual reference is not available the Pilot should then carry out the procedures described in the Landing or Missed Approach areas of this chapter.

f) Non-Precision Approach – Missed Approach Point/Missed Approach Waypoint Upon arrival at the Missed Approach Point or the Missed Approach Waypoint the following calls shall be made depending on the circumstance:

i) If the required visual reference is available the Pilot should should then carry out the procedures described in the Landing or Missed Approach areas of this chapter.

ii) If the required visual reference is not available the Pilot should then carry out the procedures described in the Missed Approach area of this chapter.

[The paragraphs pertaining to glide slope, localizer and track, deviations are predicated on displays that have two index marks between centre and full deflection on each side of centre (five index marks). If your Aeroplane is equipped with another type of display, amend the following accordingly. Also, if your Aeroplane is equipped with an automatic warning system that alerts when a deviation occurs, make the deviation calls congruent with the automatic alerts.]

g) Glide Path, Front Course Localizer The provisions of this paragraph apply after the front course localizer and/or glide path capture has occurred. If the glide path or localizer display indicates that the Aeroplane has deviated from centre by one dot (the first index mark from centre) the Pilot should re-capture the"Glide Path" or "Localizer" as appropriate. If the glide path or localizer display indicates that the Aeroplane has deviated from centre by full deflection the Pilot shall "Go Around". The pilot should then carry out the procedures described in the Missed Approach area of this chapter.

h) Back Course Localizer The provisions of this paragraph apply after back course localizer capture has occurred up to approximately one mile from the localizer antenna. In the area of about one mile to the antenna, the localizer may be sufficiently erratic that the crew will have to determine if any action is necessary for localizer deviations. Prior to one mile from the antenna, if the back course localizer display indicates that the Aeroplane has deviated from centre by one dot (the first index mark from centre) the Pilot should re-capture "Localizer." If the back course localizer display indicates that the Aeroplane has deviated from centre by full deflection the Pilot shall re-capture or "Go Around" depending on the circumstances. If the Pilot elects to "Go Around", the pilot should then carry out the procedures described in the Missed Approach area of this chapter.

i) Track Deviations The provisions of this paragraph apply during an instrument final approach after a track has been captured. If a specific NAVAID is providing approach track guidance (NDB, VOR, VORTAC), these provisions do not apply when the Aeroplane is within approximately one mile of the NAVAID. Within one mile of the NAVAID the pilot should determine actions required for deviations. If the track indicator is the primary display and it shows that the Aeroplane has deviated from centre by one dot (the first index mark from centre) the Pilot should re-capture the"Track." If the track indicator shows that the Aeroplane has deviated from centre by full deflection the Pilot shall re-capture or "Go Around" depending on the circumstances. If the bearing indicator is the primary display and it shows

that the Aeroplane has deviated from the desired track by 10° the Pilot should correct the Aeroplane toward the track centreline. If the bearing indicator shows that the Aeroplane has deviated from the desired track by 20° the Pilot shall re-capture or "Go Around" depending on the circumstances. If the Pilot elects to "Go Around" the crew should then carry out the procedures described in the Missed Approach area of this chapter.

[The term "Stabilized Approach" will mean different things for different Aeroplane.]

j) Stabilized Approach Final approach can be a very high workload period of flight. It is also potentially one of the most hazardous phases of flight. A Stabilized Approach is intended to decrease workload, minimize crew distraction, and reduce the hazards associated with configuration changes at a critical phase of flight; generally it improves the likelihood of a successful approach. The Stabilized Approach configuration should be achieved no later than crossing the FAF/FAWP, or if there is no FAF immediately upon interception of the final approach track. Unless a stabilized approach is achieved crossing the FAF/FAWP or if there is no FAF while descending on the Final Approach Track, consideration should be given to executing a missed approach. Similarly, if one or more components of a previously stabilized approach is exceeded, consideration should be given to commencing a missed approach. A Stabilized Approach configuration is defined as follows.

i) Established on the localizer/inbound track with no deviations (+/– one dot, +/– 10° of desired track).

ii) Established on the glide path (if applicable) with no deviations (+/– one dot) or no more than 300 feet above the FAF/FAWP Minimum Altitude.

iii) No Abnormal Airspeed (within –5 KIAS and +15 KIAS of V_{app}).

iv) No Abnormal Rate of Descent (maximum descent rate of 1,000 FPM unless higher rate has been briefed). Note that for some approaches with very steep descent gradients on final approach, a rate of more than 1,000 FPM down may be required. If so, the requirement shall be briefed to all crew members.

[Insert the Aeroplane configuration(s) that apply your operation. Specify either as a requirement, a recommended profile, or an approximate configuration. In developing procedures for Intermediate/Final Approaches, consider the following items:

- Aeroplane speed;
- Engine and/or propeller settings;
- Landing Gear position;
- Flap setting;

- Icing considerations;
- Speed brake or spoiler setting;
- Timing procedures (if applicable), including which crew member(s) are to carry out timing;
- NAVAID display;
- Autopilot usage;
- Flight Director usage.]

k) NDB Approach with FAF [See configuration recommendations above.]

l) NDB Approach without FAF [See configuration recommendations above.]

m) VOR or VOR/DME Approach with FAF [See configuration recommendations above.]

n) VOR or VOR/DME Approach without FAF [See configuration recommendations above.]

o) RNAV Approach [If RNAV approaches (other than stand alone GPS) are done in your operation, insert the relevant procedures and crew coordination in this subsection. See configuration recommendations above.]

p) GPS Non-precision Approach [See configuration recommendations above.]

q) ASR Approach [If ASR approaches are done frequently in your operation, insert the relevant procedures and crew coordination in this subsection. See configuration recommendations above.]

r) ILS Category I Approach [See configuration recommendations above.]

s) ILS Category II and III Approach [If your operation is approved for ILS Category II or III Approaches, insert the relevant procedures and crew coordination in this subsection. See configuration recommendations above.]

t) MLS Approach [If your operation is approved for MLS Approaches, insert the relevant procedures and crew coordination in this subsection. See configuration recommendations above.]

u) PAR Approach [If PAR approaches are done frequently in your operation, insert the relevant procedures and crew coordination in this subsection. See configuration recommendations above.]

5.14. Circling Procedures

[The discussion in this section pertains to operators that are approved for circling at less than 1000 and 3. If your operation is not so approved, recommend that you refer to the section on VFR Circuits for procedures.]

[During circling it is mandatory that the aerodrome remain in view of the pilot. The pilot shall maintain visual contact and monitoring of Aeroplane altitude, speed, and bank angle. Whatever procedure your organization uses to carry out a circling manoeuvre, the above principles must apply. You must develop procedures that meet the requirements of your operation.]

a) General The information in this section provides guidance for circling from an Instrument Approach. Circling may be required whenever no straight-in minima are published, when the approach flown does not serve the runway of intended landing, or when a reconnaissance of the runway is advisable. Effective pilot coordination is vital to safe and effective circling. This section provides guidance for pilot coordination as well as configuration of the Aeroplane. This section must be used with the section on Landing Procedures that is found later in this chapter. Basic information on circling is found in the AIP and the Instrument Procedures Manual. The following points apply to all circling procedures:

i) Visual contact with the aerodrome shall be maintained by the pilot throughout the circling manoeuvre.

ii) If visual contact with the aerodrome is lost, a missed approach shall be executed.

iii) The Aeroplane should remain at the MDA until in a position to commence a normal descent for landing.

iv) No more than 30^{o} of bank is to be used during the circling manoeuvre.

b) Aeroplane Configuration The recommended configuration for circling until the Aeroplane commences the final descent for landing follows. For information on landing see the Landing Procedures section later in this chapter.

[Insert the Aeroplane configuration(s) that apply your operation. Specify either as a requirement, a recommended profile, or an approximate configuration. In developing procedures for Intermediate/Final Approaches, consider the following items:

- Aeroplane speed;
- Circling Category (based on the maximum speed used during the final, circling, and initial part of the missed approach);

- Engine and/or propeller settings;
- Landing Gear position;
- Flap setting;
- Icing considerations;
- Speed brake or spoiler setting;
- NAVAID display;
- Autopilot usage;
- Flight Director usage.]

c) Common Procedures The pilot flying the instrument portion of the approach should Commencing Circling in response to Visual references. Once the Aeroplane has been manoeuvred into a position for a normal landing the Pilot shall prepare to Landing and continue as described in the section "Landing Procedures" found later in this chapter. If reconnaissance of the runway is one of the objectives of the circling manoeuvre, the pilot should observe the runway relevant information using the following format:

i) Wind;

ii) Obstructions on the runway;

iii) Runway surface condition; and

iv) Remarks.

5.15. Contact/Visual Approach Procedures, VFR Circuits

a) General The purpose of carrying out a Contact Approach, a Visual Approach, or a VFR Circuit, is to position and configure the Aeroplane to carry out a safe landing. The AIP and the CARs provide a good deal of information on these procedures which will not be repeated here. This section does however, provide guidance on Aeroplane configuration, checks, and navigation.

b) Aeroplane Configuration and Checks For guidance on Aeroplane configuration and completion of checks, Contact Approaches, Visual Approaches and VFR Circuits are treated as variations of the same type of procedure.

[Insert the Aeroplane configuration(s) that apply to your operation. Specify either as a requirement, a recommended profile, or an approximate configuration. In developing procedures for Intermediate/Final Approaches, consider the following items:

- Aeroplane speed;
- Engine and/or propeller settings;

- Landing Gear position;
- Flap setting;
- Icing considerations;
- Speed brake or spoiler setting;
- NAVAID display;
- Autopilot usage;
- Flight Director usage;
- Recommended locations for completion of checks (In-Range, Before Landing, Final Landing.]

c) Navigation Navigation during visual procedures is by definition primarily by visual means. However, there is often an advantage to use other available NAVAIDS.

[Insert guidance on set up and use of NAVAIDS as applicable to your operation. The guidance may be quite rudimentary for Visual Approaches and VFR Circuits, or more detailed for Contact Approaches.]

5.16. Missed Approach

[In this section we have used "Go Around" as the standard call to initiate a missed approach. "Go Around" is used because it applies to the mode of display and operation of several flight guidance systems associated with missed approach procedures. Use of other terms such as "Overshoot" or "Missed Approach" are completely acceptable. However, we do recommend the use of terminology that is consistent with equipment in your Aeroplane.]

[To the extent practical specify missed approach procedures that are common for all or most types of missed approaches. Also, attempt to make most elements of the missed approach similar to those for a take-off.]

a) General During some approaches it will become inadvisable to continue for landing. Should this occur, a missed approach should be initiated. Guidance for specific conditions when a missed approach should be initiated is detailed throughout these SOPs. Such guidance cannot address all circumstances.

b) Common Procedures The procedures to execute missed approaches from most situations are comprised of common elements. Although some requirements will differ, such as navigation, the basic procedure is standard for all missed approaches. In all cases a missed approach is initiated by the pilot using the standard "Go Around" procedure. If Full Flap has been selected, the standard procedure is modified to "Go Around, Flaps Approach." The Pilot would then select the flaps from full to Approach. The remaining procedures for a missed approach are described in the following table.

[The following checklist is a guide only and cannot apply to all Aeroplane. The checklist particular to the Aeroplane must be inserted here]

Missed Approach – Procedure

Pilot
Select Go Around on the Flight Director. – Advise ATC "Go Around", or if appropriate call "Go Around, Select Flaps Approach."
Rotate the Aeroplane at a rate of about 2^{o} per second until the pitch attitude approximately matches the Flight Director command cue. Simultaneously advance the power levers toward the power setting briefed for the missed approach. If a power setting other than as briefed is appropriate, call for the required power.
At the "Positive Rate" , confirm a climb on the VSI and visually (if possible). If climbing: – Select "Gear Up" .
Climb at a speed of at least V_2 + 10 KIAS (if all engines are operating normally). At a safe altitude that is at least 400 ft above the departure runway accelerate to V_{fri} then: – Retract "Flaps Up".
Set any changes to NAVAID set up.
Adjust the IAS using TCS or set a particular speed using the thumb wheel. Do not exceed ____ KIAS until the Gear is Up and the Flaps are Up.
If Take-off Power is no longer required: – "Set Climb Power" (If other than standard power is required at this point set the specific power required, ie. " Max Continuous Power.")
Follow the published/cleared/circuit missed approach. Climb to the missed approach altitude or circuit/cleared altitude: – Complete "After Take-off Check" or the "Downwind Check" if applicable.

[If your Aeroplane or operation can make use of additional guidance for missed approaches under specific circumstances (ie. Category II ILS) detail them as separate procedures/tables or as text in the form of differences from common procedures.]

5.17. Landing Procedures

[The minimum information required in this section is that which will allow the pilot to be coordinated throughout the landing procedure. Depending on your operation, you may wish to elaborate on landing techniques in addition to pilot coordination. If your Aeroplane/operation uses more than one landing procedure with substantial differences, use additional tables of coordination instructions as required. If only small differences exist for various flap configurations or crosswind conditions, it may be better to simply discuss the variations as text. If a Flapless Landing or a landing with a particular flap setting is an abnormal or emergency procedure, such a discussion is best dealt with in the Abnormal and Emergency Procedures chapter.]

[An example of guidance for landing technique for a fictitious Aeroplane is included in this section. The Aeroplane can be landed from either seat and has limited nose wheel steering from both seats. Ground steering is only available from the pilot seat.]

This section on Landing Procedures provides guidance for flight from the completion of the Final Landing Check through landing until the Aeroplane has slowed to taxi speed. The following table contains guidance on landing procedure for a normal landing.

[The following checklist is a guide only and cannot apply to all Aeroplane. The checklist particular to the Aeroplane must be inserted here]

Table 5-3 **Normal Landing – Procedure**

Pilot
Adjust the final approach glide path to as close to 3^{o} as is practical under the conditions. At between 200 and 100 ft above touchdown reduce airspeed from V_{app} to cross 50 ft above the threshold at V_{ref}. Change the correction for crosswind from crab to wing down/opposite rudder by 50 ft above the threshold.
As soon as both main wheels are on the runway, smoothly but quickly lower the nose wheel to the runway. Maintain slight forward pressure on the control yoke and increase into wind roll control until the controls are locked.

Pilot
As soon as the nose wheel is on the runway, select the power levers to disc. Confirm that both ground range lights illuminate. If the ground range lights illuminate, reverse may be used until the Aeroplane is almost at a stop or until blown dust or snow moves forward to the leading edge of the wing, whichever occurs first. Brakes should be used as required.
For a pilot seat flown landing, at maximum of ___ KIAS: – begin taxiing by steering with the tiller.

5.18. After Landing Procedures, After Landing Check

The After Landing Check should be carried out once the Aeroplane has taxied clear of the active runway. In conditions of light aerodrome traffic and/or if a long taxi on the active runway is required before exiting to a taxiway, the After Landing Check may be done on the runway. Taxi procedures are discussed in the Normal Flight Procedures Departure chapter. The expanded After Landing Check follows.

AFTER LANDING CHECK

Controls **Locked**
Flaps **Up**
Landing Lights **Off**

If there is a significant hazard of collision, it may be advisable to leave the landing lights on until clear of the active runway.

A/COL Lights **Red**

Select Anti-Collision strobe lights to red to reduce glare for other Aeroplane.

Ignition **NORMAL**

The ignition should to normal unless required for taxiing in slush.

After Landing Check **Complete**

Taxiing Without All Engines Operating [If Applicable]

[Insert applicable information in the following sub-section only if your Aeroplane is permitted to taxi without all engines operating.]

Taxiing the [Aeroplane Type] Aeroplane without all engines operating is approved. However, the following limitations and procedures apply:

The Shutdown Check is to be carried out to secure an engine during taxi.

Taxiing in congested areas is not permitted.

Taxiing in reverse is not permitted.

Normal and stand-by hydraulic power must be available to operate brakes.

Nose wheel steering must be operating.

5.19. Shutdown Procedures, Shutdown Check

Once the Aeroplane has been taxied to the parking position and stopped, the Shutdown Check should be used to secure the engines and prepare the Aeroplane for unloading. If the Aeroplane will not be de-powered, (as for a station stop) not all items will be carried out. The Shutdown Check is also to be used to shutdown an engine during taxi. The expanded Shutdown Checklist follows.

[The following checklist is a guide only and cannot apply to all Aeroplane. The checklist particular to the Aeroplane must be inserted here]

SHUTDOWN CHECK

EMERGENCY BRAKES **PARK**
External Power **a/r**

External power should be connected for a station stop and cabin lighting should be operated if disembarking passengers at night.

FMS **a/r**

The FMS would only be shutdown if the Aeroplane is to be de-powered, or if it is necessary to re-initialize it. For a station stop it may be left initialized provided external power is available.

Power Levers	**Flight Idle**
Condition Levers	**Start & Feather**
STBY HYD Switches	**NORM**
Condition Levers	(after 30 sec) **Fuel Off**

A period of 30 sec is required between selection of start feather and fuel off to permit proper oil migration in the engine.

Shutdown Check	**Complete**

Annex A to Chapter 5
NORMAL FLIGHT PROCEDURES - ARRIVAL,
ABBREVIATED CHECKLISTS

[The following is an example only. Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook.]

Introduction

The abbreviated form of the Arrival checklists follows.

DESCENT CHECK

Pressurization	**Set**
Landing Data	**Computed & placarded**
Approach Review	**Complete**
Passenger Briefing	**Complete**
Descent Check	**Complete**

IN-RANGE CHECK

Ignition	**a/r**
FASTEN BELTS Lights	**ON**
Harnesses	**Secure**
Altimeters	**Set**
In-Range Check	**Complete**

DOWNWIND CHECK

Autofeather	**Off**
Bleeds	**ON**
Approach Review	**Complete**
Downwind Check	**Complete**

BEFORE LANDING CHECK

Landing Gear Lever	**Selected Down**
Synchrophase	**OFF**
Propellers	___% or Max
Flaps	**Selected to Approach or Up**
Warning/Caution Panel	**Checked**
Landing Gear	**Down**
Flaps	**Approach Set**
Before Landing Check	**Complete**

FINAL LANDING CHECK

Bleeds	**OFF**
Flaps	**Selected to Approach/Land/Up**
Flaps	**Approach/Land Set or Up**
Final Landing Check	**Complete**

AFTER LANDING CHECK

Controls	**Locked**
Flaps	**Up**
Landing Lights	**Off**
A/COL Lights	**Red**
Ignition	**NORMAL**
After Landing Check	**Complete**

SHUTDOWN CHECK

Emergency Brakes	**PARK**
External Power	**a/r**
FMS	**a/r**
Power Levers	**Flight Idle**
Condition Levers	**Start & Feather**
STBY HYD Switches	**NORM**
Condition Levers	(after ___ sec) **Fuel Off**
Shutdown Check	**Complete**

Chapter 6. After Flight

6.1. Introduction

a) For the purpose of these SOPs, "After Flight" is from, but not including, the shut down of the last engine at the completion of a flight and includes most after flight activities. It does include starting and stopping of an engine to reposition the Aeroplane at the completion of flight.

b) For multiple flights, portions of this chapter and the chapter pertaining to "Pre-Flight" shall apply.

6.2. Apron Safety and Embarking/Disembarking Passengers

[Although some of the after flight requirements are dealt with in the Company Operations Manual, the following deals only with pilot responsibilities. It may be advantageous to include specific details such as:

- safety procedures;
- securing of propellers.

For additional information refer to the CARs and related standards or contact your regional office.]

Unless otherwise arranged, the Pilot shall escort passengers on the apron to and from the Aeroplane. Additional information can be found at the section with the same title in the Before Flight chapter.

6.3. Fuelling With Passengers Onboard, Embarking or Disembarking

Information on fuelling with passengers on board may be found in the section with the same title in the Before Flight chapter.

6.4. Repositioning using Aeroplane Engines

The requirements for repositioning using Aeroplane engines are described in the section with the same title in the Before Flight chapter.

6.5. Auxiliary Power Unit

[If your Aeroplane is not equipped with an auxiliary power unit delete this section.]

The procedures for use of the Auxiliary Power Unit after flight are essentially the same as those for before flight. Refer to the Before Flight chapter for procedures.

6.6. Servicing

Unless otherwise arranged the pilot is responsible for the following servicing tasks. Should one or more of these tasks be carried out by another party (ie. fuelling carried out by a Fixed Base Operator) the pilot is still responsible for ensuring that the task was completed correctly.

a) Checking and replenishment of engine oil;

b) Checking and replenishment of hydraulic fluid;

c) Checking and replenishment of fuel;

d) Checking and replenishment of anti-icing/de-icing fluid.

6.7. Elementary Work

Some elementary work is routinely carried out in support of normal operations. The pilot responsibilities pertaining to such work follow. Additional guidance on the following work and other elementary work will be provided during the applicable training.

a) Passenger Seats Installation and/or Removal The Pilot is responsible for correct completion of any work done for installation or removal of passenger seats, including the appropriate Journey Log Book entries..

6.8. After Flight Duties

a) Arrival Reports The Pilot is to make any required arrival reports.

b) Aeroplane Security When the Aeroplane is not to be flown for a significant period (such as at the end of a work day), particularly if it will be unattended, it is to be secured. The pilot is responsible for its security. The securing of the Aeroplane includes, but is not limited to, the following:

i) installation of pitot and static vent covers;

ii) installation of stall warning sensor guards;

iii) installation of intake covers;

iv) installation of landing gear and gear door safety pins;

v) installation of wheel chocks;

vi) locking of Aeroplane doors and hatches;

vii) grounding the Aeroplane;

viii) tying down the Aeroplane (if required);

ix) installation of wing, and stabilizer covers.

Chapter 7. Abnormal And Emergency Procedures

7.1. Introduction

a) General The contents of this chapter pertain to the operations during abnormal and emergency situations. It is impossible to develop guidance and procedures to deal with all situations. The judgement, skill, and training of all persons involved are necessary to bring an abnormal or emergency situation to a safe conclusion. The guidance in this chapter is in the form of instructions, expanded checklists, detailed procedures, or a combination of all of these. Unless safety is jeopardized they shall be applied in the handling of Abnormal and Emergency situations.

b) Publications These SOPs have been developed to provide as much guidance as practical for handling Abnormal and Emergency situations. Obviously, it is not possible to deal with all situations. Accordingly, it may be appropriate to refer to other publications such as:

i) [Aeroplane Manufacturer] [Aeroplane Type] approved Pilot's Operating Handbook (POH) (additional guidance on the relationship of the SOPs and the POH can be found in the General chapter);

ii) [Operator's Company Name] Operations Manual;

iii) Canada Air Pilot (CAP);

iv) Aeronautical Information Publication (AIP) Canada;

v) Canada Flight Supplement.

7.2. General

a) Objectives Obviously, the primary objective in dealing with an Abnormal or Emergency situation is to complete the operation safely. To achieve this primary objective other goals need to be pursued and tenets observed, depending on the situation. The following is a partial list. Depending on the circumstance others may need to be developed to meet the needs imposed by the situation.

i) The abnormality or emergency should be mitigated such that Aeroplane operation is returned to as close to normal as possible.

ii) Although it is usually desirable to complete abnormal and emergency procedures quickly, it is more important that they be done correctly.

iii) The safety of passengers and persons on the ground is the first priority. The safety of the crew is the second priority. The third priority is the protection of property and the Aeroplane.

b) Aural and Visual Indications An aural alarm should be silenced as soon as the situation that the alarm applies to is clearly recognized. Visual caution and warning indications should be cancelled and re-armed as soon as practical after they are triggered. The condition that caused the indication should be determined before further action.

c) Automatic Protection Devices and Systems Reset of a service that has been disabled by an automatic protection device or system is subject to the limitations in the following paragraphs:

i) If a failed system is required for the completion of the flight, an attempt may be made to return it to service. If it is not required, the system should remain out of service.

ii) Unless otherwise indicated in the SOPs, checklists, or POH, a circuit breaker that has opened should be reset a maximum of once to attempt to return a needed item to service. If the circuit breaker opens a second time no attempt should be made to reset it.

iii) A generator that has tripped may only be reset once unless otherwise specified in the SOPs, checklist, or POH.

d) Pilot Coordination – General The importance of a pilot dealing with an abnormal or emergency situation cannot be overstated. The general sequence for handling an abnormal or emergency situation is described in the following paragraphs.

i) The pilot should make the applicable call either identifying the condition or initiating the appropriate immediate action.

ii) The Pilot should initiate for the applicable drill or check.

iii) As soon as practical after the initial actions are taken to respond to an abnormal situation, all crew members and the passengers should be apprised of the situation and planned action.

e) Pilot Coordination – External Communication During normal operations the Pilot is tasked with timely routine communication to ATC and other agencies. During the handling of emergency or abnormal situations the Pilot may be fully occupied with other duties. Therefore, during abnormal procedures the protocols described in the following paragraphs should be observed.

i) During the drill portion of an emergency procedure, external communication is to be delayed until the drill is complete.

ii) During the completion of the check portion of an emergency or abnormal procedure the Pilot should handle the external communication.

f) Pilot Coordination – Internal Communication During an abnormal or emergency situation effective internal communication is necessary for dealing with the situation, preventing it from becoming worse, and to reduce the unfavourable impact of events. The following areas of internal communications are relevant.

[Delete this section if your operation does not make use of crew members other than Flight Crew.]

i) Crew Members Crew members other than pilots do require information to carry out their duties. The pilot shall provide certain key information to other crew as soon as the initial actions for an emergency or abnormal situation are done. Due to high workload it may be necessary for crew members to actively extract from the flight crew the information that they require. The general information that the crew members will need to know is discussed in the section titled "Common Procedures, Emergency Landing."

[Additional information about communication with passengers during abnormal and emergency situations is available from the Passenger/Cabin Safety section of your regional office.]

ii) Passengers Passengers have a need and a right to know what is happening in an emergency situation. As soon as practical after the initial actions are taken to safeguard the flight, the passengers should be provided with an honest and accurate summary of the situation. [Modify the next sentence to suit your operation depending on whether or not you carry crew other than the pilots.] Although the initial situation briefing may be provided to the passengers by any crew member, at some point the Pilot should speak to them personally. Guidance on information to be provided to passengers is found in the section titled "Common Procedures, Emergency Landing."

[The contents of the following subsection may need to be modified for your operation. Consider such factors as:

- location of controls and switches;
- availability of flight instrument displays;
- experience of flight crews.]

g) Pilot Coordination – Aeroplane Control Except where the malfunction of Aeroplane controls prevents it, the pilot should control the Aeroplane manually during the initial corrective actions. In many cases experience that a Pilot possesses may be better employed in overall management of an abnormal or emergency condition than in the manipulation of flight controls. Also, within the limitations described in the POH, the autoflight system should be used to reduce pilot workload.

7.3. Handling of Abnormal and Emergency Procedures

a) The guidance in the following excerpt from the [Aeroplane type] checklist applies to all abnormal and emergency procedures. Although *they are not verbalized during the handling of abnormal situations, these items shall be committed to memory and shall be done for all abnormal and emergency situations. The expanded contents of the checklist follow.

b) **A thorough knowledge of procedures is required to deal with abnormal and emergency situations.** It is impossible to provide guidance for all situations. Sound judgment must prevail. The following directions apply to all abnormal and emergency situations.

i. FLY THE AEROPLANE, It is of no consequence how quickly and correctly a drill or check is completed, if the Aeroplane departs controlled flight.

ii. Silence any aural warning. Cancel and re-arm any visual alert.
iii. Aural warnings should be reset to reduce distraction to the crew in handling the situation and to re-arm the system(s) in the event that further malfunctions occur.

iv. Identify the emergency or abnormal condition

v. It is vital that the situation be correctly identified so that the appropriate action is taken.

vi. Take the appropriate action

7.4. Checks, Checklists, and Drills

a) General The additional direction in the following paragraphs applies to the guidance that is provided in the General chapter.

i) The drills and checks that apply to some situations are included in the same checklist. The memory items that comprise the drill portion of the procedure are indicated by a medium bullet " " two spaces to the left of the item.

ii) Unlike normal procedures checks, there is no statement that a particular check is "complete" as the last item. This difference is required as some checks lead to other checks. It is up to the pilot to commence and complete checks.

[Briefly describe the organization of your Abnormal and Emergency Checklists. This information would probably be useful to your pilots in finding the information that they need to deal with a problem. The following is an example only.]

b) Organization The Checklists for Abnormal and Emergency Procedures are grouped into the following sections. The discussion in these SOPs follows the same order as is used in the checklist.

i) Common Procedures Procedures that apply to all Abnormal and Emergency situations and includes general procedures for a landing after dealing with an emergency, other than a ditching or forced landing off of an aerodrome.

ii) Engine and Propeller.

iii) Fuel System.

iv) Hydraulics and Brakes.

v) Landing Gear.

vii) Electrical.

viii) Flight Controls. Includes flaps.

vii) Ice Protection Systems.

ix) Airframe and Fuselage. Includes pressurization, heating/cooling/ventilation, smoke and fire other than related to engines.

x) Off Aerodrome Landing. Includes: Ditching, Forced Landing.

x) Ground Emergency Procedures. Includes: Aborted Take-off, Evacuation, Fire/Smoke on the Ground.

c) The following items do not have specific checklists. They are Abnormal and Emergency situations. The handling is discussed in the latter portion of this chapter, separate from the items that are in the checklists.

i) Abnormal Take-off

ii) Stall Recovery

iii) Pilot Incapacitation

iv) Bomb Threat and Hijacking

v) Post Evacuation Actions

vi) Wind Shear

7.5. Emergency Landing

The following is an excerpt from the checklist detailing the actions required for a landing subsequent to an airborne emergency. The items marked by medium bullets "●", the first letters of which form the acronym "TESTRA" are to be committed to memory

EMERGENCY LANDING

a) For a landing following an airborne emergency or for any landing when the situation presents a significant hazard, the following points should be addressed:

b) As soon as practical after the initial emergency actions, brief the FA or passengers. The amount of detail will vary depending on the time available. The briefing should be in the following format:

c) FAs are to expect that the following format is to be used by the pilot to provide critical information. During an emergency the pilot may become distracted. It may not be possible for the pilot to provide the following information as an unbroken stream. FAs must be judicious in soliciting information from the pilot. However, FAs shall obtain the following information – even if it is not in the following sequence or if it is necessary to query the pilots repeatedly.

- **T**ype of emergency. Briefly indicate what the emergency is, ie. Engine Failure, Hydraulic Malfunction, Cracked Window, etc. Obviously, more detail must be provided to crewmembers than to passengers.

- **E**vacuation information. Evacuation information should include: whether the landing will be on or off an aerodrome; the route and/or exits that are to be used to evacuate from the Aeroplane.

[To the extent practical you should standardize the signals to be used. It may not be possible to specify that one particular method is to be used. However, the number of chimes or flashes of a warning light should be standardized for various situations.]

- **S**ignals. Detail the method that will be used to signal bracing for landing/impact and the signal to commence evacuation. Depending on the situation, the signals could include: a call on the intercom, a series of chimes of the cabin public address system, a call on the public address system, activation of the emergency lights, or a combination.

- **T**ime remaining. Brief the time remaining to landing and, if different ,the time remaining to prepare. Depending on the nature of the emergency it may be necessary to cease preparations some time before landing (ie. controllability difficulties may necessitate that no one move about the Aeroplane during the latter part of descent).

- **R**elocation of passengers. Brief if it is necessary/advisable to relocate passengers, or if movement of passengers is not permitted (due to time or adverse affects on the balance of the Aeroplane).as to the nature of the emergency, its effects, the flight time remaining and, (if required) the evacuation procedures.

- **A**nnouncements. If flight attendants are on board, detail who will brief the passengers. Ideally the FAs should provide the most detailed briefing to passengers. If no FA is on board the Pilot should brief the passengers. The announcement should follow the same format as the briefing to the crew, ie. "TESTRA." The Pilot's announcement should make it clear to the passengers that the crew is managing the situation and should reaffirm the authority of the flight attendant to manage the situation in the cabin.

— Advise ATC and any other relevant agencies of intentions and CFR requirements.

— Secure all loose objects on the flight deck and in the cabin.

— Ensure all crew and passenger seat belts and shoulder harnesses are secure and locked.

— Review the applicable post landing procedures with all crew members.

— If applicable: De-pressurize the Aeroplane and select the Emergency Lights to ON.

— If appropriate, plan for an Evacuation once the Aeroplane comes to a stop.

— Once the Aeroplane comes to a stop, specifically direct the passengers to remain seated and await instructions. Then, if appropriate, initiate the Evacuation drill.

7.6. Single Engine Piston Aeroplane, Engine Failure – During Take Off, After Vr

[Depending on the characteristics of your Aeroplane, it may be appropriate to combine the procedures and drills/checks for After Take-off and In Flight into one check. The following is for a fictitious Aeroplane. You will have to develop procedures for your Aeroplane in accordance with the POH.]

The following is the procedure, and expanded drill and check, to be carried out in the event of a Single Engine Aeroplane Engine Failure/Fire – During Take-off, After Vr

Pilot
●**Aeroplane Control Fly The Aeroplane** Maintain Directional Control
●**Airspeed** Set up best glide speed
●**Select a landing Site** Plan the approach.
●**Cause Check** Only if time and altitude permit (fuel on, Fuel Pumps On, Primer Locked, Mixture Rich, All Switches as Required)
●**MAYDAY MAYDAY MAYDAY** May be a blind Emergency radio transmission commencing with.
●**Mixture To Idle Cutoff**
●**Fuel Selector Valve Off**
●**Ignition Switch Off**
●**Flaps Gear as required**
●**Master Switch Off**
●**Brief Passengers**
●**Prepare For Forced Landing EVACUATE**

7.7. Multi Engine Aeroplane, Engine Failure – During Take Off, After Vr

[Depending on the characteristics of your Aeroplane, it may be appropriate to combine the procedures and drills/checks for After Take-off and In Flight into one check. The following is for a fictitious Aeroplane. You will have to develop procedures for your Aeroplane in accordance with the POH.]

The following is the procedure, and expanded drill and check, to be carried out in the event of a Multi Engine Aeroplane Engine Failure/Fire – During Take-off, After Vr

● **Aeroplane Control Fly the Aeroplane I Control Yaw Roll Airspeed** Achieve a speed of Vyse (blueline) until flap retraction. Attempt to achieve the optimum attitude which is the slip/skid ball ½ ball width away from the live engine and 5^{o} of bank into the live engine.
●**Both Mixture Full Rich** advance both mixture levers
●**Both Propellers Full Forward/Fine** advance both propellers levers
●**Both Throttles Full Forward** advance both throttles levers
●**Drag Check** Landing Gear UP Flaps Up
●**Identify Inoperative Engine** deadfoot dead engine, engine gauges
●**Verify Inoperative Engine** by reducing throttle of the suspected inoperative engine
●**Feather** The propeller on Inoperative engine.

●**Cause Check** If time and altitude permit, attempt to assess and correct problem using appropriate checklists. Then advance throttle to determine if engine is developing power.
●**Secure Engine** Throttle lever Inop Engine to **Idle**. Propeller lever Inop Engine to **Feather** Mixture Lever Inop Engine **Cut off** Complete the check list and monitor operating engine and its related systems
Brief Passengers

7.8. Turbine Multi Engine Failure/Fire – During Take-Off, After V_1

[Depending on the characteristics of your Aeroplane, it may be appropriate to combine the procedures and drills/checks for After Take-off and In Flight into one check. The following is for a fictitious Aeroplane. You will have to develop procedures for your Aeroplane in accordance with the POH .]

The following is the procedure, and expanded drill and check, to be carried out in the event of an Engine Failure/Fire – During Take-off, After V_1. This procedure applies for a failure or fire during take-off from immediately after V_1, until autofeather has been selected OFF as part of the After Take-off or Downwind checks. Note the following:

a) The autofeather and power uptrim are assumed to operate correctly except where indicated.

b) No actions are required if automatic systems operate correctly.

c) No action except raising the landing gear is carried out below 400 ft. above the DER (or safe altitude – whichever is higher) if: the autofeather and power uptrim function correctly; or for a fire with the burning engine producing sufficient power.

Pilot Procedure

ENGINE FAILURE/FIRE AFTER – DURING TAKE-OFF, AFTER V_1

Pilot
● Control **Directional Control & Min V_2** Maintain directional control and rotate the Aeroplane at a rate of about 2^o per second until the pitch attitude approximately matches the Flight Director command cue. Achieve a speed of V_2 until flap retraction. Attempt to achieve the optimum attitude which is the slip/skid ball ½ ball width away from the live engine and 5^o of bank into the live engine. If the control inputs are optimum the Flight Director will command the correct bank. If Aeroplane is controllable make no call.
● Gear **UP** At the "Positive Rate" , confirm a climb on the VSI and visually (if possible). If climbing:
>> WARNING **<<** Failure of the autofeather may require the pilot to perform the ENGINE FAILURE/FIRE Drill prior to 400 ft or safe altitude, and before Flap retraction. If no autofeather and affected engine is not producing sufficient power, complete the Engine Failure or Fire Drill as follows: – For an engine failure, initiate "Engine Failure Drill # 1 (or # 2) Engine." – For an engine fire, initiate "Engine Fire Drill # 1 (or # 2) Engine." If no initiation of drill is made, or if the affected engine is producing sufficient power call for the drill after the flaps

Pilot
have been retracted.
● Flaps **UP (At Safe Alt – Min 400 ft)** Climb at a speed of V_2. At a safe altitude that is at least 400 ft. above the departure runway, accelerate to V_{fri} then: – "Flaps Up"
● **Engine Failure/Fire Drill – Affected Engine** Accelerate to V_{climb} and initiate the drill as follows: – For an engine failure, "Engine Failure Drill # 1 (or # 2) Engine." – For an engine fire, "Engine Fire Drill # 1 (or # 2) Engine."
Confirm that the hand is on the power lever for the correct engine. – If correct "FLIGHT IDLE."
- Confirm that the hand is on the condition lever for the correct engine. – If correct "FUEL OFF."
Continue to climb at V_{climb}
Confirm that the hand is on the correct engine T-handle. – If correct "Pull."
- Acknowledge the Engine Fire Drill : – If the Fire Warning persists, Pilot initiate next action.
Continue to climb at V_{climb} and monitor the situation
When the Pilot confirms "Gear Up, Flaps Up", if Maximum Take-off Power is no longer required or if the maximum time limit is expended: – "Set Max Continuous Power" – If it is desired to leave the bleed air off, add the direction "Bleed Off."
Climb to at least 1000 ft. above the aerodrome elevation. – "Carry out Engine Failure/Fire Check

Pilot
1 (or # 2) Engine."
At a convenient point: – Complete the "After Take-off Check", or the "Downwind Check" if applicable.

7.9. Engine Failure/Fire – In Flight

[Depending on the characteristics of your Aeroplane, it may be appropriate to combine the procedures and drills/checks for Engine Failure/Fire After Take-off and In Flight into one check. The format in the section for Engine Failure/Fire – After V_1, may or may not be suitable for an Engine Failure/Fire – In Flight drill for your Aeroplane. An expanded checklist may be more applicable. You will have to develop procedures for your Aeroplane in accordance with the POH.]

The checks and drills for an Engine Failure/Fire – In Flight apply to all phases of flight other than take-off, and include during Missed Approach. The following is the expanded drill and check.

ENGINE FAILURE/FIRE – IN FLIGHT

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook]

7.10. Engine Shutdown (In Flight)

The following is the expanded Engine In Flight Shutdown Checklist. The check is in two phases. Phase 1 is to be followed to initiate the shutdown of an engine in flight where there is time to consult the checklist. Phase 2 is to be used to continue the shutdown after phase 1 or to complete the shutdown subsequent to the Engine Failure/Fire After – After V_1 drill or the Engine Failure/Fire – In Flight drill. In either case the check is done with reference to the checklist and memory items.

ENGINE SHUTDOWN (IN FLIGHT)

Phase 1

Crew/Pax Briefing **Complete**

For an intentional shutdown of an engine in flight when there is sufficient time to consult the checklist, there should also be time to brief any crew and passengers. The information listed in the Emergency Landing check should be used as guide for the information to be passed. If time does not permit a briefing before

the shutdown, carry out the briefing as soon as possible afterwards.

Control	**Direction & Min V_2/V_{climb}**

Maintain directional control. The minimum speed is best glide, V_2, Vyse, Blueline with any flap, or V_{climb} if flapless. Attempt to achieve the optimum attitude which is the slip/skid ball ½ ball width away from the live engine and 5^o of bank into the live engine. If the control inputs are optimum the Flight Director will command the correct bank.

Power	**Max Continuous on operating engine**
Gear	**a/r**
Flaps	**a/r**

Flaps may be left at the current setting if not more than ___%. If more than ___% they should be retracted to ___%, unless landing is assured.

Affected Engine

POWER Lever	**FLT IDLE**
Condition Lever	**FUEL OFF**
Confirmed Feather	**If reqd – ALTERNATE FEATHER**
AUX PUMP	**OFF**
T-handle	**Pull**

Phase 2

IGNITION–operating engine	**MANUAL/ON**
IGNITION–affected engine	**OFF**
POWER Levers	**a/r**
HYD Press & Qty	**Check**
If abnormal	
ENG HYD PUMP check	**(Page xx) Complete**

NOTE

For ___% Flap Landing: Landing Field Length = ___% Flap Unfactored Landing Distance multiplied by Factor of ___

>> WARNING <<

Level flight may not be possible with one engine inoperative if landing gear and flaps are extended, without exceeding limitations on the operating engine. If practical do not extend landing gear and flaps until in a position to carry out an uninterrupted descent to landing.

7.11. Engine Hot Start, Failed Start, Clearing Procedure

The following is the expanded Engine Hot Start, Failed Start, Clearing Procedure.

ENGINE HOT START, FAILED START, CLEARING PROCEDURE

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook .]

7.12. Propeller Overspeed

The following is the expanded drill and check for a propeller overspeed in flight.

PROPELLER OVERSPEED

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook – provided of course, that your Aeroplane has propellers.]

7.13. Fuel Pressure #1 or #2 Engine

The following is the expanded check for low fuel pressure.

FUEL PRESS #1 or #2 ENG

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook]

7.14. Engine Hydraulic Pump

The following is the expanded checklist for the illumination of the warning light Engine Hydraulic Pump.

ENG HYD PUMP

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook]

7.15. Alternate Landing Gear Extension – Hand Pump

The following is the expanded checklist for Alternate Landing Gear Extension using the Hand Pump.

ALTERNATE LANDING GEAR EXTENSION HAND PUMP

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook]

7.16. Unsafe Landing Gear Down Indication

The following is the expanded checklist for an Unsafe Landing Gear Down Indication.

UNSAFE LANDING GEAR DOWN INDICATION

If any of the green gear locked down advisory lights fail to illuminate:

Gear Indication System **Test**

If landing gear warning system indicates a fault a normal landing may be performed if the gear can be visually confirmed as safe.

Gear Status **Attempt to confirm visually**

If unable to confirm gear down:

Alternate Landing Gear Extension – Hand Pump **Complete**

>> WARNING <<

Do not re-cycle landing gear up and then down to attempt safe gear indication. Additional damage to landing gear may occur. If the landing gear unsafe indication is due to malfunction, additional operation may cause further damage and jeopardize the safety of the Aeroplane.

7.17. DC Generator

The following is the expanded checklist to be carried out for the illumination of the warning light for # 1 DC Generator.

DC GENERATOR

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook]

7.18. Flapless Landing

[If Flapless Landing is not an abnormal procedure for your type of Aeroplane, do not include the procedure in this section. Rather, describe the procedure in the Normal Flight Procedures – Arrival chapter in accordance with the POH.]

The following is the expanded checklist to be carried out for a Flapless Landing.

FLAPLESS LANDING

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook]

7.19. Airframe De-ice Failure

The following is the expanded checklist to be carried out for an Airframe De-ice Failure.

AIRFRAME DE-ICE FAILURE

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook .]

7.20. Airframe Fire

The following is the expanded checklist to be carried out for an Airframe Fire other than inside the fuselage.

AIRFRAME FIRE

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook .]

7.21. Fuselage Fire/Smoke

The following is the expanded checklist to be carried out for Fire or Smoke in the Fuselage (cabin and flight deck) and for removal of the associated smoke.

FUSELAGE FIRE/SMOKE

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook]

7.22. Rapid Decompression

[If your Aeroplane is not pressurized delete this section.]

The following is the expanded checklist to be carried out for Rapid Decompression.

RAPID DECOMPRESSION

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook]

7.23. Ditching

[In developing procedures for ditching, provide guidance for both if there is time to prepare, and if there is no time to prepare.]

The following is the expanded checklist to be carried out to prepare for and carry out a Ditching.

DITCHING

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook and insert the passenger briefing/crew procedures.]

7.24. Forced Landing

[In developing procedures for Forced Landing, provide guidance for both if there is time to prepare, and if there is no time to prepare. The Aeroplane Flight Training Manual, Part 2, Chapter21 and 22 provide guidance]

The following is the expanded checklist to be carried out to prepare for and carry out a Forced Landing, where the landing can not be carried out on an aerodrome.

FORCED LANDING

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook and insert the passenger briefing/crew procedures.]

7.25. Abort/Rejected Take Off

[This section deals with the procedures to be followed for discontinuing a take-off. We have used the term "Abort" in this section. Other popular terms are "Reject", " Reject Brakes", and "Refuse". The choice of terms to be used is yours, however you should be consistent throughout your operation.]

[In developing procedures for aborting a take-off consider the following:

Provide general guidelines for when the take-off should be aborted and when it is probably safer to continue the take-off with a malfunction. In the following example, the guidance refers to the Abnormal Take-off section later in the chapter for situations that do not require an abort.

Make a clear statement that an abort is not to be attempted after V_1 or a decision speed If your type of Aeroplane requires a procedure for recovery on the remaining runway after V_1, decision speed, or after the Aeroplane has lifted off, we recommend that two procedures be developed. One abort procedure would apply to an abort up to V_1 or decision speed The second procedure would provide guidance for aborting between V_1 and the point where landing on the remaining runway is not feasible.

Provide very clear guidance on the decision making process to abort a take-off or to continue. In developing the guidance consider the following:

Many abort situations do not become apparent until the Aeroplane speed is very near to V_1 decision speed.

The process to decide to continue or to abort (including initiation of the abort) shall not take longer than the period allowed for as part of the certification. That is, the time from recognition of a problem at V_1 / decision speed until the time that deceleration begins is included in the calculation for the performance charts of the Aeroplane. This time is very brief. In many cases there is only sufficient time to direct that an abort is to occur. There is likely insufficient time for a discussion that includes a description of the malfunction. Any delay in commencing an abort at V_1 may result in the Aeroplane running off of the take-off surface, or becoming airborne uncommanded and possibly out of control.

Whatever you determine as the process for deciding to take-off or abort, it must be described very clearly.

We recommend that a drill and checklist be specified for the abort. However, as an effective abort will likely require very specific pilot actions, a detailed procedure would probably be useful.]

[In our example (for a fictitious Aeroplane) the pilot may initiate an aborted take-off, and bring the Aeroplane to a stop. For our example Aeroplane, an abort cannot be safely carried out after V_1.]

A take-off shall be aborted if the Aeroplane speed has not exceeded V_1 or the decision speed and a situation develops that the safety of the Aeroplane would be jeopardized if the flight is continued. For abnormal or emergency situations when the Aeroplane speed is in excess of V_1, in most cases the safest course of action is to continue the take-off and deal with the situation in flight. For all aborted take-offs where the Aeroplane speed has not exceeded V_1, the following procedure is to be used. If it is necessary to abort a take-off at a speed greater than V_1 no procedure is specified. However, it is recommended that the abort before V_1 procedure be used to the extent practical. For situations at or below V_1 where safety of the Aeroplane would not be jeopardized by continuing the flight, see section on Abnormal Take-offs later in this chapter.

Pilot Procedure – Abort Take Off

Pilot
-- Upon recognition – Initiate "Aborting"
● POWER LEVERS **Both to Disc** Raise the power lever triggers and select them to the discing position.
● Braking **Maximum until stopped** Apply maximum braking until stopped or until it is clear that maximum braking is not required. Initially maximum braking should be applied as brakes may only be available for a brief time. If normal brakes have failed use emergency brakes as described in POH.
● Reversing **a/r** Use reversing if necessary and within the limits of directional control
● When Aeroplane has stopped **applicable drill/check** When the Aeroplane has stopped carry out the actions for the applicable drill. Unless it is obviously safe to taxi, stop the Aeroplane on the runway.
● Evacuation Drill **initiate if req'd** The Evacuation Drill is initiated only if required and only by the Pilot. It is

Pilot
carried out by the Pilot
If it is safe to taxi, clear the active runway.

7.26. Evacuation

[In developing procedures for evacuation consider the following:
- Specify the minimum actions that are required to sufficiently shut down the Aeroplane to make it as safe as reasonable for the passengers to leave the Aeroplane.
- As there is potential for injury, specify that if possible the Pilot should command the evacuation. Specify the procedures to initiate evacuation if the Pilot is incapacitated.
- Specify by individual crew member who is to carry out each action for handling of passengers during the evacuation.
- Provide guidance for handling of disabled and non-ambulatory passengers.

Contact your regional office for additional information on handling of passengers in an evacuation]

Evacuation Drill The evacuation drill is initiated by the Pilot using the standard call "Evacuation Drill." If the Pilot is unable to issue the command, any other crew member may do so if warranted. The expanded evacuation drill follows. The drill as described is predicated on the pilot being able to carry it out.

EVACUATION

- EMERGENCY BRAKES **SET**
- Condition Levers **FUEL OFF**
- T-Handle **Pull**

Pull the T-Handle only in the event of an engine fire, and then only the T-Handle of the affected engine. The extinguishers will only arm for one of the engines. Pulling the T-Handles for both engines may select the extinguishers to the wrong engine

- Extinguisher Switches **a/r**

Operate both extinguisher switches for the affected engine.

- EMERGENCY LIGHTS **ON**

- AFTER PROPELLERS HAVE STOPPED
- Evacuation Initiate

The Pilot should command evacuation unless incapacitated. The standard call by the Pilot for initiating evacuation is " Evacuate through (indicate the exit to be used)! Now!" The command is to be spoken three times in a clear and very loud voice.

- Electrical Power Systems **OFF**

Electrical power must be available for the Public Address System to be used to command the evacuation. As soon as the command to evacuate is given, the Electrical Power Systems should be selected off.

Passenger Evacuation [Insert the crew duties for handling of passengers during an evacuation.]

7.27. Fire/Smoke on the Ground

[In developing procedures for Fire/Smoke on the Ground it is probably most useful to develop a procedure that leads to the Evacuation Drill. That is, only those actions should be specified that are not included in the Evacuation Drill, but apply specifically to smoke or a fire that occurs during ground operations. An example follows.]

Should smoke or a fire develop during ground operations (such as taxi or engine start), the Fire/Smoke on the Ground drill is to be completed. The drill leads to the Evacuation Drill, which is used to secure the Aeroplane for evacuation.

FIRE/SMOKE ON THE GROUND

- Aeroplane **Stop**

At the first indication of smoke or a fire, bring the Aeroplane to a stop and set the EMERGENCY BRAKES to PARK.

- ATC **Advise**

Advise ATC or any other applicable agency of the problem and request any available assistance.

- Passengers **Remain Seated/Standby**

Advise the passengers to remain seated and standby for further instructions.

- Evacuation Drill **Initiate**

7.28. Abnormal Take-off

Abnormal Take-off procedures apply when a malfunction occurs during the take-off and initial climb that does not warrant an abort or an emergency drill. It is not possible to specify procedures for the multitude of malfunctions that could possibly occur during take-off. However, the general procedure for an Abnormal Take-off is as follows:

a) Upon noticing a problem the Pilot should ascertain the nature of the abnormality.

b) The Pilot should carry out any applicable check, unless it is inappropriate to do so.

7.29. Stall Recovery

[In this section discuss the procedures for recovery from an impending stall. The objective for most Aeroplane is to prevent the situation from progressing to an actual stall. If your Aeroplane has no stall warning system or if your organization is allowed to dispatch with the stall warning system unserviceable, also detail the procedure for recovery from an actual stall.]

[In developing the procedures to recover from an impending stall we recommend that you link to other existing procedures as much as possible. Stalls seldom occur operationally. Therefore, if the stall recovery procedure is substantially similar to another procedure that is used more frequently, there is a higher likelihood of success. In the following example, the stall recovery procedure is essentially a variation of the missed approach procedure.]

[In our example, the fictitious turboprop Aeroplane has a stick shaker system to warn of an impending stall. The Aeroplane is not permitted to dispatch with an unserviceable stall warning system. Also, in order to carry out a recovery from a full flap configuration the flaps must be partially retracted.]

a) Stall Indications and Recovery Requirements The first indication of an impending stall for the [insert Aeroplane type] is high angle of attack and low airspeed. If the impending stall is detected at this point – prior to the activation of the stick shaker, it may be corrected by the crew by increasing the airspeed and reducing the angle of attack. An impending stall that is corrected prior to the activation of the stick shaker does not require that the crew abandon the approach or other procedure that

is being carried out. If the situation progresses to the activation of the stick shaker, the procedure being flown should be abandoned and the priority changed to a stall recovery.

b) Stall Recovery Procedures The following procedure should be used to recover from an impending stall when the stick shaker has activated. This procedure may also be used should the crew determine that recovery from an impending stall is appropriate even before the stick shaker has activated.

i) The Pilot should simultaneously: relax back pressure on the control column; advance the power levers; and set power to "Go Around", Set Flaps Approach" if full flap has been extended.

ii) The Pilot should roll the wings level (if the Aeroplane is in a bank) and maintain speed just above the stick shaker activation. The stick shaker may briefly activate during the initial recovery.

iii) The Pilot should then carry out the Missed Approach procedure described in the Normal Flight Procedures – Arrival chapter.

iv) .The objective is to fly the Aeroplane out of a very hazardous situation. However, consideration must also be given to levelling the Aeroplane at an altitude that will not pose another problem. Such an altitude could be the assigned altitude, the instrument missed approach termination altitude, or applicable minimum safe altitude.

7.30. Spin Recovery

[In this section discuss the procedures for recovery from an impending spin. The aim in spin recovery is to upset the balance between the aerodynamic and inertia moments. Due to the fact that Aeroplane spin characteristics differ, recovery techniques specified in the Pilot's Operating Handbook must be followed.]

[In our example, the procedure is suitable for most small Aeroplane and may be used in the absence of manufacturer's data.]

a) Spin Recovery Procedure The following procedure should be used to recover from a spin.

i) Power to idle
ii) Neutralize Ailerons

iii) Apply and hold full rudder opposite to the direction of rotation.
IV) Just after the rudder reaches the stop, move the control column positively forward far enough to break the stall. Full down elevator may be required.
v) Hold these control inputs until rotation stops.
vi) As rotation stops, neutralize rudder, level the wings, and recover smoothly from the resulting dive.

7.31. Bomb Threat and Hijacking

[Contact your regional office for information on developing bomb threat and hijacking procedures.]

a) Insert your procedure

7.32. Post Evacuation Actions

[It may be in the company's interest to specify the crew's actions in dealing with outside agencies (such as the news media) after an evacuation.]

a) Command At the completion of the evacuation the Pilot shall be in charge of the passengers and the Aeroplane until such time as safety of the passengers and the security of the Aeroplane is provided for.

b) Actions After the completion of the evacuation the Pilot should ensure that the following are carried out:

i) By counting the evacuated passengers and crew, determine that all are accounted for.

ii) Keep passengers together to the extent practical and locate them at a safe distance from the Aeroplane. Passengers may be disoriented and/or in shock. They may tend to wander about, posing a hazard to themselves and others.

iii) Medical attention is provided to passengers that require it.

iv) To the extent practical and necessary, provide passengers with protection from environmental conditions.

vii. Passengers or crew are not to be permitted to return to the Aeroplane until it is safe to do so.

viii. The Aeroplane is protected from further damage and from interference if an investigation of the Aeroplane is likely.

7.33. Wind Shear

[If your operations manual does not provide guidance on avoiding wind shear it may be prudent to insert some guidance here. Insert guidance here on the crew coordination for coping with wind shear should it be encountered.]

a) Insert your procedure

Annex A to Chapter 7
ABNORMAL AND EMERGENCY PROCEDURES,
ABBREVIATED CHECKLISTS

[The following is an example only. Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook.]

Introduction

The abbreviated form of the Abnormal and Emergency Procedures Checklists follow.

COMMON PROCEDURES

ABNORMAL & EMERGENCY PROCEDURES – GENERAL PROCEDURES

A thorough knowledge of procedures is required to deal with Abnormal and Emergency Situations. It is impossible to provide guidance for all situations. Sound judgment must prevail. The following directions apply to all Abnormal and Emergency Situations.

- **FLY THE AEROPLANE**
- Silence any aural warning. Cancel and re-arm any visual alert.
- Identify the emergency or abnormal condition
- Take the appropriate action

EMERGENCY LANDING

For a landing following an airborne emergency or for any landing when the situation presents a significant hazard, the following points should be addressed:

— As soon as practical after the initial emergency actions, brief the FA or passengers. The amount of detail will vary depending on the time available. The briefing should be in the following format:

- **T**ype of emergency
- **E**vacuation information
- **S**ignals
- **T**ime remaining

- **R**elocation of passengers
- **A**nnouncements

— Advise ATC and any other relevant agencies of intentions and CFR requirements.
— Secure all loose objects on the flight deck and in the cabin.
— Ensure all crew and passenger seat belts and shoulder harnesses are secure and locked.
— Review the applicable post landing procedures with all crew members.
— If applicable: De-pressurize the Aeroplane and select the Emergency Lights to ON.
— If appropriate, plan for an Evacuation once the Aeroplane comes to a stop.
— Once the Aeroplane comes to a stop, specifically direct the passengers to remain seated and await instructions. Then, if appropriate, initiate the Evacuation drill.

ENGINE AND PROPELLER

SINGLE ENGINE PISTON AEROPLANE – ENGINE FAILURE – DURING TAKE-OFF, AFTER V_r

- Control **Directional Control**
- Airspeed **Bestglide**
- Landing site **Plan approach**
- Causecheck **Time permitting**
- MAYDAY **(3X)**
- Mixture **Idle Cut Off**
- Fuel **Off**
- Ignition **Off**
- Flaps **a/r**
- Gear **a/r**
- Master **OFF**
- Pax **Briefed**
- Forced Landing **Prepare**
- Evacuate **a/r**

MULTI ENGINE AEROPLANE, ENGINE FAILURE – DURING TAKE-OFF, AFTER V_r

- Control **Directional Control YAW ROLL**
- Airspeed **Min Blueline Vyse**
- Mixtures **Both Full Rich**
- Propellers **Both Full Fine**
- Throttles **Both Full Forward**
- Drag Check **Gear Flaps UP**
- Identify **Dead Foot Dead Engine**
- Verify **Inoperative Engine**
- Propeller **Feather**
- Cause **Time Permitting**
- Secure Engine
- Pax **Briefed**

TURBINE MULTI ENGINE FAILURE/FIRE – DURING TAKE-OFF, AFTER V_1

- Control **Directional Control & Min V_2**
- Power **Take-off Power + Uptrim**
- Gear **UP**
- Autofeather **Confirmed**

>> WARNING <<

Failure of the autofeather may require the pilot to perform the ENGINE FAILURE/FIRE/SEVERE DAMAGE Drill prior to 400 ft or safe altitude, and before Flap retraction

- Flaps **UP (At Safe Alt – Min 400 ft)**

- **Engine Failure/Fire Drill – Affected Engine**

- POWER Lever **FLT IDLE**
- Condition Lever **FUEL OFF**
- Confirmed Feather **If reqd – ALTERNATE FEATHER**
- AUX PUMP **OFF**

- T-handle **Pull**

- **Engine Fire**

  - Extinguisher Switch **FWD BTL**
  - **If Fire Warning persists after 30 sec:**
  - Extinguisher Switch **AFT BTL**
  - Engine Shutdown Check Ph. 2 **(Page xx) Complete**

ENGINE FAILURE/FIRE – IN FLIGHT

[Insert the procedures, checks, and/or drills for your Aeroplane.]

ENGINE SHUTDOWN (IN FLIGHT)

Phase 1

Crew/Pax Briefing	**Complete**
Control	**Direction & Min V_2/V_{climb}**
Power	**Max Continuous**
Gear	**a/r**
Flaps	a/r

Affected Engine

(C) POWER Lever	**FLT IDLE**
(C) Condition Lever	**FUEL OFF**
Confirmed Feather	**If reqd** – **ALTERNATE FEATHER**
AUX PUMP	**OFF**
(C) T-handle	**Pull**

Phase 2

IGNITION–operating engine	**MANUAL/ON**
IGNITION–affected engine	**OFF**
POWER Levers	**SET**
HYD Press & Qty	**Check**
If abnormal	
ENG HYD PUMP check	(Page xx) **Complete**

NOTE

For ___% Flap Landing: Landing Field Length = ___% Flap Unfactored Landing Distance multiplied by Factor of ____

ENGINE HOT START, FAILED START, CLEARING PROCEDURE

[Insert the procedures, checks, and/or drills for your Aeroplane.]

PROPELLER OVERSPEED

[Insert the , checks, and/or drills for your Aeroplane – provided of course, that your Aeroplane has propellers.]

FUEL SYSTEM

FUEL PRESS #1 or # 2 ENG

[Insert the procedures, checks, and/or drills for your Aeroplane.]

HYDRAULICS AND BRAKES

 # 1 ENG HYD PUMP

[Insert the procedures, checks, and/or drills for your Aeroplane.]

LANDING GEAR

ALTERNATE LANDING GEAR EXTENSION HAND PUMP

[Insert the procedures, checks, and/or drills for your Aeroplane.]

UNSAFE LANDING GEAR DOWN INDICATION

If any of the green gear locked down advisory lights fail to illuminate:

Gear Indication System **Test**
Gear Status **Attempt to confirm visually**

If unable to confirm gear down:

Alternate Landing Gear Extension – Hand Pump **Complete**

>> WARNING <<
Do not re-cycle landing gear up and then down to attempt safe gear indication. Additional damage to landing gear may occur.

FLIGHT CONTROLS

FLAPLESS LANDING

[Insert the procedures, checks, and/or drills for your Aeroplane.]

ICE PROTECTION SYSTEMS

AIRFRAME DE-ICE FAILURE

[Insert the procedures, checks, and/or drills for your Aeroplane.]

AIRFRAME AND FUSELAGE

AIRFRAME FIRE

[Insert the procedures, checks, and/or drills for your Aeroplane.]

FUSELAGE FIRE/SMOKE

[Insert the procedures, checks, and/or drills for your Aeroplane.]

RAPID DECOMPRESSION

[Insert the procedures, checks, and/or drills for your Aeroplane.]

OFF AERODROME LANDING

DITCHING

[Insert the passenger briefing/crew procedures, checks, and/or drills for your Aeroplane.]

FORCED LANDING

[Insert the passenger briefing/crew procedures, checks, and/or drills for your Aeroplane.]

GROUND EMERGENCY PROCEDURES

ABORT

- POWER LEVERS **Both to Disc**
- Braking **Maximum until stopped**
- Reversing **a/r**
- ATC/Traffic **Advised**
- When Aeroplane has stopped **applicable drill/check**
- Evacuation Drill **initiate if reqd**

EVACUATION

- EMERGENCY BRAKES **SET**
- Condition Levers **FUEL OFF**
- T-Handle **Pull**
- Extinguisher Switches **a/r**
- EMERGENCY LIGHTS **ON**

- **AFTER PROPELLERS HAVE STOPPED**
- Evacuation **Initiate**
- Electrical Power Systems **OFF**

FIRE/SMOKE ON THE GROUND

- Aeroplane **Stop**
- ATC **Advise**
- Passengers **Remain Seated/Standby**
- Evacuation Drill **Initiate**

Chapter 8. Safe Operating Practices

8.1. Introduction

This chapter of the SOPs, "Safe Operating Practices" provides guidance for limitations on some types of procedures and describes some procedures that do not appropriately fall in the other chapters. Although some guidance is provided on training, the direction pertains to coordination and Aeroplane operation. Training requirements are found in the Company Operations Manual.

8.2. Weather Minima for IFR training flights

Consistent with guidance from Transport Canada, weather at CYYJ must meet Alternate Weather Minima as published in the CAP.

NOTE

It is highly advisable that for flights where weather minima forecast to be at or below VFR minima, the weather at time of departure is printed and saved for future reference

Weather on planned approaches that include a planned missed approach below standard alternate minima requires specific CFI verbal authorization on a flight-by-flight basis.

8.3. Flight into Known Icing Conditions

Flights into known icing (FIKI) are forbidden. GFAs must be consulted when considering the icing conditions en-route. Known Icing is considered to exist when the GFA indicates:

a) Freezing level below 5000ft ASL, and:

b) Either:

i) Forecast ceiling below 5000ft ASL, or;

ii) TCU forecast along the route of flight

Consideration must be given to cloud layers below cruise altitude, but above the freezing level, even if they only scattered (SCT) or FEW.

These altitudes have been developed in conjunction with Nav Canada based on Minimum Radar Vectoring Altitudes for the Victoria and Vancouver Terminal Area. Due to the nature of IFR flying, and the restrictive nature of the Victoria and Vancouver Terminal Airspace,

visual avoidance of supercooled cloud should not be relied upon for flight planning purposes.

Table 8-1 Restrictions for Specified Operations

Manoeuvre, Operation, or Procedure	Type of Flight Auth for	Restrictions
Maximum Performance Take-off and Initial Climb	ANYFLT NONPAX MUTUAL SUPVSD	ANYFLT – Apply Take-off power with brakes on only if required. After lift-off reduce to normal deck angle and climb profile as soon as runway and obstacles permit. NONPAX – Unrestricted. MUTUAL – Unrestricted. SUPVSD – Unrestricted.
Take-off in weather below re-land limits.	ANYFLT SIMLTR	ANYFLT – Capt must be PF. SIMLTR – Unrestricted.
Touch and Go Landing	MUTUAL SUPVSD TSTFLT	MUTUAL – Min usable runway: 5000 FT. with RCR of "Fair" or better. SUPVSD – Min usable runway: 4500 FT. with RCR of "Fair" or better. TSTFLT – Min usable runway: 5500 FT. with RCR of "Fair" or better.
Landing on gravel surface	ANYFLT MUTUAL SUPVSD	ANYFLT – Capt must be PF. MUTUAL – PF must be qualified to Capt status but need not be assigned as Capt for the particular flight. SUPVSD – Unrestricted.
Engine Shutdown, in-fight, actual (other than due to malfunction)	SUPVSD TSTFLT	SUPVSD – On initial training only. Min altitude 5000 AGL. Max distance to usable aerodrome 30 NM. Min weather: visibility 3 SM, no more than scattered cloud below. TSTFLT – When required by maintenance. Restriction as for SUPVSD
Engine Failure or Fire, simulated	MUTUAL SUPVSD	MUTUAL – Shall not be initiated below 1000 AGL. When Aeroplane re-configuration complete, may operate below 1000 AGL to landing. SUPVSD – Shall not be initiated below 1000 AGL. When Aeroplane re-configuration complete, may operate below 1000 AGL to landing.
Engine Failure or Fire, between V_1 and 1000 AGL	SIMLTR	SIMLTR – Permitted in simulator only.
Approach to stall	SUPVSD SIMLTR	SUPVSD – Recovery to be initiated on first warning or indication of stall. Minimum altitude 5000 AGL. Min weather: visibility 3 SM, min height above tops of any cloud – 3000 ft. SIMLTR – Unrestricted.
Stall	TSTFLT SIMLTR	TSTFLT – Recovery to be initiated on the first of the following indications: uncommanded nose down pitch, Aeroplane sink with full nose up elevator command, uncommanded wing drop. Minimum altitude 8000 AGL. Min weather: visibility 3 SM, min height above tops of

Manoeuvre, Operation, or Procedure	Type of Flight Auth for	Restrictions
		any cloud – 5000 ft. SIMLTR – Unrestricted.

Chapter 9. Sample Checklists

[The following is an example only. Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook.]

Pre-flight Checklists

PRE-EXTERNAL CHECK

Chocks	**a/r**
Parking Brakes	**ON**
Batteries	**ON**
External Power	**a/r**
Flight Controls	**Locked**
Safety Equipment	**Checked**
Batteries	**a/r**

EXTERNAL CHECK

Left Right Fuselage

Fuel Caps	**Secure**
Left Fuselage	**Checked**
Left Main Landing Gear Pin	**a/r**

Left Right Engine Nacelle and Wing

No. 1&2 Engine Oil	**Checked**

CAUTION

Ensure oil tank cover is secure. Unsecured oil tank cover will cause complete loss of oil supply.

Wing trailing edge	**Checked**
Wing tip & position lights	**Checked**

INTERNAL CHECK

Passenger Seats	**Checked**
Cabin Oxygen Supply	**Min pres ____ psi**
First Aid Kits	**Checked**
Fire Extinguishers	**Checked**

Cabin Windows	**Checked**

FLIGHT DECK GEOGRAPHIC CHECK – PILOT

[The Flight Deck Geographic Check for the Co-pilot would follow the same format as for the pilot.]

APU START CHECK

Batteries	**ON**
External Power	**a/r**
A/COL Lights	**RED**
APU MSTR	**Press On**
APU START Switchlight	**Press**
RUN annunciator	**RUN (within ___ sec)**

APU AFTER START CHECK

APU GEN	**Press GEN**
APU BLD AIR	**Press BLD AIR (after ___ sec)**

APU SHUTDOWN CHECK

Batteries	**ON**
External Power	**a/r**
APU GEN	**Off**
APU BLD AIR	**Off**
APU MSTR or OVRSPD TST	**Press**

BEFORE START CHECK

Pre-flight checks	(**All**) **Complete**
Ignition	**NORMAL**
EMERGENCY BRAKES	**PARK**
Engines	**Clear**
Before Start Check	**Complete**

ENGINE START CHECK

Engines	**Clear**
START SELECT Switch	**Select #2**
STARTER Switchlight	**Press**
Clock	**Start timing**
Condition Lever (___-___% N_H)	**START/FEATHER**
Fuel Flow	**Confirm**
ITT	**Indication within ___ secs**
Oil Pressure	**Indication**

NOTE

Minimum oil pressure by completion of engine spool-up during start is ___ PSI. If ___ PSI is not reached by end of spool-up engine must be shut down.

Hydraulic Pressure	**Indication**
Starter	**Cut out at approx ___% N_H**
Engine Stabilized	**Stabilized at approx ___% N_H**
Bleed Air	**#2 Bleed ON/MIN**

Repeat above to start No 1 Engine

Engine Start	**Complete**

TAXI CHECK

Brakes	**Checked**
Flight Instruments	**Checked**
Altimeters	**XXXX inches Set**
APU	**Shutdown**
Take-off Briefing	**Complete**
Taxi Check	**Complete**

RUN-UP CHECK

EMERGENCY BRAKES	**PARK**
Magnetos	**Checked**
Engine RPM	**Set to ____ RPM**
Propellers	**Exercised**
Run-up Check	**Complete**

BEFORE TAKE-OFF CHECK

Standby for Take-off	**Cabin Secure**
Flight Controls	**Checked**
Bleeds	**OFF**
	Complete down to the line

Transponder	**ON/ALT**
LANDING & A/COL Lights	**ON/WHITE**
Altimeters	**Checked**
Compasses	**Set/Checked**
Before Take-off Check	**Complete**

AFTER TAKE-OFF CHECK

Landing Gear	**Up**
Flaps	**Up**
Auto-feather	**Off**
Bleeds	**ON/MAX**
FASTEN BELTS Lights	**a/r**
After Take-off Check	**Complete**

CRUISE CHECK

Power Set

NOTE

It may be necessary to reset the engine power after the Aeroplane speed has stabilized.

Altimeters	Checked
Pressurization	Checked
Fuel	Checked
Cruise Check	Complete

DESCENT CHECK

Pressurization	**Set**
Landing Data	**Computed & placarded**
Approach Briefing	**Complete**
Passenger Briefing	**Complete**
Descent Check	**Complete**

IN-RANGE CHECK

Ignition	**a/r**
FASTEN BELTS Lights	**ON**
Harnesses	**Secure**
Altimeters	**Set**
In-Range Check	**Complete**

DOWNWIND CHECK

Autofeather	**Off**
Bleeds	**ON**
Approach Briefing	**Complete**
Downwind Check	**Complete**

BEFORE LANDING CHECK

Landing Gear Lever	**Selected Down**
Synchrophase	**OFF**
Propellers	___% or Max
Flaps	**Selected to Approach or Up**
Warning/Caution Panel	**Checked**
Landing Gear	**Down**
Flaps	**Approach Set**
Before Landing Check	**Complete**

FINAL LANDING CHECK

Bleeds	**OFF**
Flaps	**Selected to Approach/Land/Up**
Flaps	**Approach/Land Set or Up**
Final Landing Check	**Complete**

AFTER LANDING CHECK

Controls	**Locked**
Flaps	**Up**
Landing Lights	**Off**
A/COL Lights	**Red**
Ignition	**NORMAL**

After Landing Check	**Complete**

SHUTDOWN CHECK

Emergency Brakes	**PARK**
External Power	**a/r**
FMS	**a/r**
Power Levers	**Flight Idle**
Condition Levers	**Start & Feather**
STBY HYD Switches	**NORM**
Condition Levers	(after ___ sec) **Fuel Off**
Shutdown Check	**Complete**

[The following is an example only. Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook.]

SINGLE ENGINE PISTON AEROPLANE – ENGINE FAILURE – DURING TAKE-OFF, AFTER V_r

- Control **Directional Control**
- Airspeed **Bestglide**
- Landing site **Plan approach**
- Causecheck **Time permitting**
- MAYDAY **(3X)**
- Mixture **Idle Cut Off**
- Fuel **Off**
- Ignition **Off**
- Flaps **a/r**
- Gear **a/r**
- Master **OFF**
- Pax **Briefed**
- Forced Landing **Prepare**
- Evacuate **a/r**

MULTI ENGINE AEROPLANE, ENGINE FAILURE – DURING TAKE-OFF, AFTER V_r

- Control **Directional Control YAW ROLL**
- Airspeed **Min Blueline Vyse**
- Mixtures **Both Full Rich**
- Propellers **Both Full Fine**
- Throttles **Both Full Forward**

- Drag Check **Gear Flaps UP**
- Identify **Dead Foot Dead Engine**
- Verify **Inoperative Engine**
- Propeller **Feather**
- Cause **Time Permitting**
- Secure Engine
    - Pax **Briefed**

ENGINE FAILURE/FIRE – DURING TAKE-OFF, AFTER V_1

- Control **Directional Control & Min V_2**
- Power **Take-off Power + Uptrim**
- Gear **UP**
- Autofeather **Confirmed**

>> WARNING <<

Failure of the autofeather may require the crew to perform the ENGINE FAILURE/FIRE/SEVERE DAMAGE Drill prior to 400 ft or safe altitude, and before Flap retraction

- Flaps **UP (At Safe Alt – Min 400 ft)**

- **Engine Failure/Fire Drill – Affected Engine**

- POWER Lever **FLT IDLE**
- Condition Lever **FUEL OFF**
- Confirmed Feather **If reqd – ALTERNATE FEATHER**
- AUX PUMP **OFF**
- T-handle **Pull**

- **Engine Fire**

- Extinguisher Switch **FWD BTL**
- **If Fire Warning persists after 30 sec:**
- Extinguisher Switch **AFT BTL**
- Engine Shutdown Check Ph. 2 **(Page xx) Complete**

ENGINE FAILURE/FIRE – IN FLIGHT

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook.]

ENGINE SHUTDOWN (IN FLIGHT)

Phase 1

Crew/Pax Briefing	**Complete**
Control	**Direction & Min V_2/V_{climb}**
Power	**Max Continuous**
Gear	**a/r**
Flaps	**a/r**

Affected Engine

POWER Lever	**FLT IDLE**
Condition Lever	**FUEL OFF**
Confirmed Feather	**If reqd – ALTERNATE FEATHER**
AUX PUMP	**OFF**
T-handle	**Pull**

Phase 2

IGNITION–operating engine	**MANUAL**
IGNITION–affected engine	**OFF**
POWER Levers	**SET**
HYD Press & Qty	**Check**
If abnormal	
ENG HYD PUMP check	(Page xx) **Complete**

NOTE

For ___% Flap Landing: Landing Field Length = ___% Flap
Unfactored Landing Distance multiplied by Factor of ____

ENGINE HOT START, FAILED START, CLEARING PROCEDURE

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook.]

PROPELLER OVERSPEED

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook – provided of course, that your Aeroplane has propellers.]

FUEL SYSTEM

FUEL PRESS #1 or # 2 ENG

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook.]

HYDRAULICS AND BRAKES

 # 1 ENG HYD PUMP

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook.]

LANDING GEAR

ALTERNATE LANDING GEAR EXTENSION HAND PUMP

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook.]

UNSAFE LANDING GEAR DOWN INDICATION

If any of the green gear locked down advisory lights fail to illuminate:

Gear Indication System	**Test**
Gear Status	**Attempt to confirm visually**

If unable to confirm gear down:

Alternate Landing Gear Extension – Hand Pump **Complete**

>> WARNING <<

Do not re-cycle landing gear up and then down to attempt safe gear indication. Additional damage to landing gear may occur.

FLIGHT CONTROLS

FLAPLESS LANDING

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook.]

ICE PROTECTION SYSTEMS

AIRFRAME DE-ICE FAILURE

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook.]

AIRFRAME AND FUSELAGE

AIRFRAME FIRE

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook.]

FUSELAGE FIRE/SMOKE

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook.]

RAPID DECOMPRESSION

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook.]

OFF AERODROME LANDING

DITCHING

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook.]

FORCED LANDING

[Insert procedures that are used in your operation that are applicable to your Aeroplane as per the Pilot's Operating Handbook.]

GROUND EMERGENCY PROCEDURES

ABORT REJECTED TAKE - OFF

- POWER LEVERS **Both to Disc**
- Braking **Maximum until stopped**
- Reversing **a/r**
- ATC/Traffic **Advised**
- When Aeroplane stopped **applicable drill/check**
- Evacuation Drill **initiate if reqd**

EVACUATION

- EMERGENCY BRAKES **SET**
- Condition Levers **FUEL OFF**
- T-Handle **Pull**
- Extinguisher Switches **a/r**
- EMERGENCY LIGHTS **ON**

- **AFTER PROPELLERS HAVE STOPPED**
- Evacuation **Initiate**
- Electrical Power Systems **OFF**

FIRE/SMOKE ON THE GROUND

- Aeroplane **Stop**
- ATC **Advise**

- Passengers **Remain Seated/Standby**
- Evacuation Drill **Initiate**