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Department of Civil Aviation
Aeronautical Information Services
ATC Operations Building
Yangon International Airport
Mingaladon, Yangon 11021
MYANMAR

AIC

02/10
01 December 2010

CHECKLIST OF AERONAUTICAL INFORMATION CIRCULARS

The following Aeronautical Information Circulars are still current:-

No.	*Title*
05/02	The Appointment of Local Legal Agent
06/02	Letter of Intent (RVSM)
08/02	Requirement of Area Navigation (RNAV) on the revised route structure over the Bay of Bengal
01/04	Issue of permits to foreign airlines which commenced operations to Myanmar prior to 1 July 2003
01/05	Prevention of Runway Incursions
02/05	Specific en-route holding Procedures
05/05	Marshalling of Aircraft
01/06	Classification of Aerodromes
01/07	Approach and Landing Accident Reduction Measures
02/07	Guidance for operators on training programmes for the use of Terrain Awareness and Warning System (TAWS)
03/07	Standard Operating Procedures for Flight Deck Crew Members
04/07	Passenger Loading Bridge (Aerobridge) Charges
05/07	Guidance for Air Operators on the establishment of a Flight Safety Department
06/07	Guidance to Operators on conducting Constant Descent Final Approach (CDFA) for Non-Precision Approaches
07/07	Guidance to Air Operators in Establishing a Flight Safety Documents System
10/07	Security measures on the carriage of Liquids, Aerosols and Gels (LAGs) for passengers departing Myanmar.
01/09	Requirements for grant of a permit to a foreign airline for commencement of scheduled international air services
02/09	Letter of Intent (WGS- 84 Coordinates and DGPS Survey)
01/10	AIRAC System/Amendments to AIP Myanmar for The Year 2011

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M Y A N M A R

AIC

A 05/ 02
1 June

APPOINTMENT OF LEGAL AGENT

1. General

Department of Civil Aviation, Myanmar has become aware of that there is a need to issue this AIC in order to overcome administrative and monetary affairs covering both aspects of overflight traffic and landing traffic.

2. Description

Therefore with effect from 1 October 2002 all commercial airline operators are advised to appoint a legal agent in Yangon, Myanmar who is responsible to cater for obtaining overflight clearance, landing clearance and monetary issue and that priority will be given to airline operators with local agent in the issuance of clearance.

2.1 Airline operators operating on schedule basis to and from Yangon International Airport, Myanmar compulsorily require to have a local legal agent.

2.2 Airline operators overflying Yangon FIR on schedule basis or on a non-schedule basis are required to have a local agent either on a permanent or temporary basis till their airlines are qualified for regular schedule airlines.

2.3 Overflying airline operators with high frequency of overflights are advised to have a local legal agent.

2.4 Technical landing traffic without overnight need not have a local agent. But if the overnight is more than 3 days, temporary local agent or temporary sponsor is required.

3. Additional Information

3.1 Obtaining for overflight and landing permission is as per our AIC 02/98 dated 1 Jan 98 and need no further clearification.

3.2 Our Department of Civil Aviation account number is FC (Foreign Currency) 91921, Myanma Foreign Trade Bank (MFTB), Mahabandoola Garden Street, Yangon, Myanmar.

3.3 Our corresponding banks with MFTB are as below and you may use the undermentioned C.B as deemed most appropriate by you.

1)	City Bank	New York
2)	Bank of America	New York
3)	Development Bank of Singapore (DBS)	Singapore
4)	United Oversea Bank (UOB)	Singapore
5)	Oversea Union Bank (OUB)	Singapore
6)	Oversea Chinese Banking Corporation (OCBC)	Singapore
7)	Standard Chartered Bank	Singapore

4. Conclusion

After securing appointment of local legal agent a copy of document is to be produced to the Director General of Civil Aviation. Also change of authorized legal agent is to be made known to the Director General of Civil

Aviation, Myanmar in advance of one month. The purpose of this AIC is to expedite both the administrative and monetary issue.

Director General
Department of Civil Aviation

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AIC

A 06/ 02
15 June

LETTER OF INTENT

INTRODUCTION OF REDUCED VERTICAL SEPARATION MINIMUM OPERATION IN YANGON FLIGHT INFORMATION REGION

1. Introduction

1.1 This circular has been produced principally to prepare for the planned mandate on 27 November 2003 of reduced vertical separation minimum (RVSM) operation in Yangon FIR.

1.2 RVSM is the generic term for the reduction in vertical separation from 2000 feet to 1000 feet between FL290 and FL410 inclusive and that RVSM approved aeroplane may be allowed to operate within this volume of airspace.

1.3 This circular also served as an advanced information to all the airline operators to enable them ensure the implementation of this program proceeds as planned.

1.4 In the implementation process Department of Civil Aviation will strictly adhere to ICAO Doc. 9574-AN/934, Guidance Material for RVSM application in the Airspace of Asia Pacific Region and FAA Interim Guidance 91- RVSM.

2. Approval Requirement

2.1 Airline operator with the intention to operate within this volume of airspace shall fulfill the requirements needed for RVSM approval. Requirements are as laid down in ICAO Doc.9574-AN/934 Chapter 2.

2.2 To serve this purpose this office mandate that with effective from 01 January 2003 all turbine engine aircraft of maximum certified take-off mass in excess of 30,000 lbs or authorised to carry more than 30 passengers engaged in either international commercial air transport or general aviation must be equipped with TCAS Version 7 or an equivalent ACAS II (AIC A03/02 dated 1 Jan 2002 is hereby referred.).

3. Operational Approval

3.1 Domestically operated Myanmar registered airlines are to obtain operational approval from Director-General of Department of Civil Aviation Myanmar.

3.2 Domestically operated non-Myanmar registered airlines are to obtain operational approval from their relevant Civil Aviation Authority of the country of registry and produce their document to the Director-General of Department of Civil Aviation for assessment and revalidation.

4. Conclusion

This circular serves only as an advance information. The actual implementation date will be promulgated in due course. Required General Procedure and Contingency Procedure will be published once Route Restructure over the Bay of Bengal is in place.

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Department of Civil Aviation, Myanmar

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Myanmar

AIC

08/02

1 October

REQUIREMENT FOR AREA NAVIGATION (RNAV) ON THE REVISED ROUTE STRUCTURE OVER THE BAY OF BENGAL

1. This Aeronautical Information Circular serves as Notice of Intent to implement RNAV routes in Yangon FIR on 28 Nov 2002 at 0200UTC.

2. RNAV airspace and RNAV routes will be implemented in the Yangon FIR at FL 280 and above inclusive FL 460. Yet some routes will be remained non-RNAV.

3. RNAV is a method which permits aircraft navigation along any desired flight path within the coverage of the associated navigation aids, or within the limits of the capability of self-contained aids, or a combination of these methods. For the purpose of this AIC, RNAV equipment is considered to be that equipment which operates by automatically determining aircraft position from one, or a combination of the following sensors with the means to establish and follow a desired path:

    a) VOR / DME
    b) DME / DME
    c) INS
    d) LORAN C
    e) GNSS

4. Effective 0200UTC on 28 November 2002, only aircraft equipped with RNAV systems would be able to operate on the RNAV routes in the Bay of Bengal. Aircraft that are not RNAV compliant will only be cleared to operate on non-RNAV routes or below FL 280 on RNAV routes. Details of the ATS routes are published in AIRAC AIP SUP 07/02.

5. Airworthness Division, Department of Civil Aviation-Myanmar is responsible for issuing the aircraft approval to Myanmar-registered aircraft with regard to the RNAV system. The requirements for conduct of RNAV operations are stated in ICAO DOC 9613 (Manual on Requirements Navigation Performance).

6. For other information on aircraft and operations approval, please contact:

    Director
    Airworthiness Division
    Department of Civil Aviation, Myanmar
    Tel: 95 1 662736
    Fax: 95 1 665124
    E-mail: dca.myanmar@mptmail.net.mm

For Director General
U Yoa Shu
Dy-Director (Air Traffic Services)

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AIC
01/04
01 April

ISSUE OF PERMITS TO FOREIGN AIRLINES WHICH COMMENCED OPERATIONS TO MYANMAR PRIOR TO 1 JULY 2003

1. INTRODUCTION

1.1 The Myanmar Aircraft Rules 1934, Part XIII: Licensing of Air Transport Services requires that a permit be issued to foreign airlines operating to the Union of Myanmar.

1.2 AIC No. 02/03 was issued on 1 July 2003 stipulating the requirements for grant of a permit to a foreign airline for commencement of scheduled international air services.

1.3 As there are foreign designated airlines already operating scheduled services to Myanmar under respective bilateral air services agreements prior to the issue of AIC No. 02/03, it is required to regularize the said operations by issuing permits to those airlines to be in accordance with the requirement mentioned in sub-paragraph 1.1 above.

1.4 This AIC is issued for information and compliance by foreign designated airlines which had commenced operations to Myanmar prior to 1 July 2003.

2. DOCUMENTS TO BE FILED

2.1 The following documents and information shall be filed by the concerned airlines to the Director General, Department of Civil Aviation.

a) the postal address, telephone and fax numbers as well as telex and e-mail addresses of the airline's head office;

b) a copy of the instrument relating to incorporation of the airline and concise details about equity participation in the airline;

c) names and nationalities of the Board of Directors of the airline;

d) a copy of a valid air operator certificate or equivalent document issued by the State of the Operator;

e) a copy of the air transport licence or equivalent document authorizing the airline to operate scheduled international air services issued by the State which designated the airline;

f) copies of valid insurance policies showing the passenger, cargo, baggage and third party liability coverage of the airline;

g) the routes and frequency or capacity being operated for the current season;

h) the tariffs being charged by the airline on each route;

i) details of fleet of aircraft utilized in the operation of the services together with their registration particulars indicating whether owned or taken on lease by the airline. In case of use of leased aircraft, a copy of the relevant lease agreement(s) shall also be provided;

j) the title and the postal address, telephone and fax numbers as well as telex and e-mail addresses of the airworthiness, licensing and accident investigation authorities in respect of the airline; and

k) if an airline branch office is not established in Myanmar, a delegation of authority by the Chief Executive of the airline to the airline's local representative(s) who will be authorized to act on behalf of the airline in matters (which shall be stated in the terms of authorization) concerning the Department of Civil Aviation of Myanmar.

2.2 The above documents shall be filed within 60 days of the date of issue of this AIC.

2.3 A Permit to Operate will be issued to the respective airlines upon fulfilment of the documentary requirements stated in sub-paragraph 2.1 above.

2.4 The Department of Civil Aviation reserves the right to require the filing of further information with respect to the items mentioned in sub-paragraph 2.1 above and any other relevant information as may be required.

3. TARIFFS

The airlines shall, in accordance with the provisions of the respective bilateral air services agreements, obtain the approval of the competent authorities for any changes in the tariffs filed as per sub-paragraph 2.1 h) above.

4. APPROVAL OF ARRANGEMENTS DONE AT AIRLINES LEVEL

Subject to and in accordance with the relevant air services agreements, approval of the competent authorities in respect of any arrangement done at airlines' level shall be submitted by the airlines to the Department of Civil Aviation.

5. FILING OF SCHEDULES

The airlines shall continue to file its proposed flight schedules for each operational season with the Department of Civil Aviation for approval according to the present procedure.

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MYANMAR

AIC

01/05

01 April

PREVENTION OF RUNWAY INCURSIONS

1. General

1.1 This Circular is issued to provide pilot awareness and air side vehicle drivers that runway incursion can and do happen at any time and present a major safety hazard. As ICAO defined Runway Incursion as "**Any occurrence at an airport involving the unauthorized or unplanned presence of an aircraft, vehicle or person on the protected area of a surface for the landing and take-off of aircraft**" it implies prevention of whatever unauthorized onto the active runway is of paramount importance.

2. Procedure to enter Active Runway

2.1 Any unauthorized vehicle, person or aircraft should not enter the active runway unless approved by Control Tower. Should the need arise, such vehicle, person or aircraft obtain Air Traffic Control approval on how and when to enter.

2.2 Authorized work schedule or party working near the active runway should informed ATC of their activities through radio telephony or walkie-talkie while maintaining vigil watch at all times both day and night .

3. Procedure to Enter air side and Regulation Requiring Maneouvres

3.1 Any person or vehicle requiring to enter the air side should apply and obtain the written approval from the Airport Manager of the Airport and obtain the security identification card from the Security Department of the airport.

3.2 For Airline Operator, any changes to the already authorized person or vehicle should be renewed .

3.3 For Vehicle Drivers

3.3.1 Airside vehicle drivers are to drive along their recommended vehicle track only.

3.4 With regard to Yangon International Airport Low Visibility Procedure for ground movement AIP MYANMAR PAGE VYYY AD 2-8 is to be referred.

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MYANMAR

AIC
02/05
01 July

SPECIFIC EN-ROUTE HOLDING PROCEDURES

1. GENERAL

With the implementation of RVSM airspace between FL290 and FL410 inclusive it is deemed necessary to establish holding areas in Yangon FIR on certain airways with the intention to maintain the safety requirement at its highest degree.

2. PURPOSE

The purpose of this AIC is to serve as a tool for ATC calculating a holding to be executed in case there is a need to regain either vertical or longitudinal separation.

3. PROCEDURES

A201	Between ANSOS and LSO segment at coordinates 2317.8N09500E both for east/west bound.
A599	Between CHILA and LSO segment at position abeam MDY VOR, on coordinates 2249.9N 09558.3E both for east/west bound.
B463/B465/R207	Right overhead MDY VOR for east/bound.
L301	East bound traffic at position 1506.9N09400.0E and for west bound traffic at position 1438.0N09600.0E.
M770	East bound traffic at coordinates 1400.0N09411.1E and for west bound traffic at coordinates 1154.1N09623.5E.

4. CONCLUSION

4.1 This procedure is to be executed only when circumstance becomes unavoidable and urgent to regain needed separation. Holding pattern is standard holding pattern with one and half minute of outbound/ inbound timing. Holding is to be exercised only if warrant by ATC calculation.

4.2 This AIC supersedes AIC 04/03 dated 1 September 2003.

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MYANMAR

AIC

05/05
15 December

MARSHALLING OF AIRCRAFT

1. INTRODUCTION

1.1 Aircraft operators/Ground handlers shall be responsible for safe and smooth operation of aircraft into and out of parking stand.

1.2 Marshaller should be competent or a certificate holder according to ICAO Annex 2.

1.3 To enhance airside safety, with effective from 15 January 2006 all aircraft shall be marshalled into and out aircraft parking stand in collaboration with ATC unit concerned.

2. ARRIVAL AIRCRAFT

2.1 Upon "Marshaller in sight" reported by the pilot the controller will relinguish aircraft to marshaller who will assign a parking stand.

2.2 A ground handler competent in marshalling procedure shall be assigned to marshal the aircraft to the assigned parking stand.

3. DEPARTURE AIRCRAFT

3.1 Competent ground handling staff shall be at the parking stand for marshalling when the aircraft in ready to depart or taxi keeping himself at a good distance for pilot proper visualisation of him.

3.2 For Airline Operator, any changes to the already authorized person or vehicle should be renewed.

3.3 For Vehicle Drivers

3.3.1 Airside vehicle drivers are to drive along their recommended vehicle track only.

3.4 With regard to Yangon International Airport Low Visibility Procedure for ground movement AIP MYANMAR PAGE VYYY AD 2-8 is to be referred.

4. COMPLIANCE

4.1 Ground handling agent to comply.

4.2 Aircraft operators to comply.

for Director-General

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MYANMAR

AIC
01/06
1 January

CLASSIFICATION OF AERODROMES

Aerodromes in Myanmar are classified based on the characteristic of the aviation activities for which the aerodromes intended to operate as follows:-

Category (A) Aerodromes intended for internationally long-haul service provided under all circumstances and gateway:-

1. Yangon International Airport
2. Mandalay International Airport

Category (B) Aerodromes intended for internationally medium-haul service provided under the same indication but which do not involve a long-stage onward departure from their aerodrome:-

1. Bagan/Nyaung-U Aerodrome
2. Heho Aerodrome

Category (C) Aerodromes intended for short and medium-haul for international tourism and technical stop non-traffic right under special approval:-

1. Sittwe
2. Thandwe
3. Dawei
4. Mawlamyine
5. Kawthoung

Category (D) Aerodromes intended for domestic air transport:-

1. The rest of all civil domestic airports

Remark

1. Non-schedule traffic - private or package - proceed to Category (A), (B) and (C) aerodromes are considered international.

2. Grouping of Aerodromes to be referred to AIP Myanmar AD 1.4.

for Director-General

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MYANMAR

AIC

01/07

1 February

APPROACH AND LANDING ACCIDENT REDUCTION MEASURES

1. GENERAL

1.1 This Circular is issued by the Department of Civil Aviation, Myanmar and contains information about standards, practices and procedures acceptable to the Authority.

2. PURPOSE

2.1 This Circular requires the implementation of Approach and Landing Accident Reduction (ALAR) Measures by Myanmar AOC Holders (air operators). Its aim is to reduce the risk of Approach and Landing Accidents (ALAs) by increasing the awareness of air operator management and flight operations personnel of the factors which contribute to ALAs and by modifying, as appropriate, operator policies, procedures, and training related to ALAR.

3. APPLICABILITY

All Myanmar AOC holders operating aircraft exceeding 5,700 kilograms maximum certificated take-off mass.

4. CANCELLATION

This is the first Circular issued on this subject.

5. EFFECTIVE DATE

This Circular is effective on 16 July,2006.

6. BACKGROUND

6.1 By far the largest number of airplane hull losses worldwide are the result of Approach and Landing Accidents (ALAs). Controlled Flight into Terrain (CFIT) comprises the largest category of ALAs. Major initiatives have been undertaken on a global basis to reduce the world wide accident rate. The FAA Commercial Aviation Safety Team (CAST) and the JAA Joint Strategic Safety Initiative (JSSI) are jointly involved in data-driven studies of accidents world wide in order to facilitate the development of global intervention strategies to counter the precursors of those accidents. A major focus of both of these initiatives is the reduction of ALAs, including CFIT.

6.2 In keeping with the ICAO Global Aviation Safety Plan (GASP), and in consonance with other global strategies to reduce accidents, an ICAO-administered programme within the Southeast Asia area, known as Cooperative Development of Operational Safety and Continuous Airworthiness Programme (COSCAP-SEA), has undertaken the task of implementing existing, globally-developed safety interventions among its Member States. This implementation is being done though a component of COSCAP-SEA known as the Southeast Asia Regional Aviation Safety Team (SEARAST). COSCAP-SEA and SEARAST membership includes the aviation regulatory authorities of its 12 Member States/Administrations within the Southeast Asia area, together with Industry Partners and Associate Members (donor agencies).

6.3 One of the first major products of the world wide effort to reduce hull losses is known as the Flight Safety Foundation (FSF) ALAR Tool Kit, which was developed by the FSF ALAR Task Force. The ALAR Tool Kit contains, on one CD-ROM, a number of checklists, briefing notes, videos, presentations, and other

documents for use by operators (and other relevant organizations) to enhance ALA awareness and to inspire changes in corporate cultures, SOPs, training, and equipment. Although the content of the Tool Kit was designed for operations using large, turbojet aeroplanes, a number of the tools are appropriate for application in most any large, fixed-wing operation.

6.4 The First SEARAST Meeting was held in Bangkok on 26 and 27 March, 2002, and was attended by representatives of COSCAP-SEA Member States/Administrations and by the majority of airlines which are regulated by those Member States/Administrations. A comprehensive review of the ALAR Tool Kit was undertaken in the course of the Meeting, and it was concluded that the regulatory authorities would act to ensure implementation of the various elements of the ALAR Tool Kit among the operators which they oversee.

6.5 This Circular outlines the steps to be taken by Myanmar air operators to review and implement the various interventions contained in the FSF ALAR Tool Kit.

7. GENERAL ACTIONS REQUIRED OF OPERATORS

7.1 Consistent with the conclusions of the First SEARAST Meeting, action must be taken by all Myanmar air operators of aircraft exceeding5,700 kg maximum certificated takeoff mass certificated by the Union of Myanmar, within 12months of the effective date of this AC to ensure that each component tool of the ALAR Tool Kit is reviewed and implemented to the extent that the tool is relevant to the operation and is consistent with company operating philosophy. When a thorough review of a tool suggests that a change to operator SOP is warranted, operators will take appropriate steps. Operator training programmes will be amended as necessary to incorporate specific ALAR modules.

8. SPECIFIC ACTIONS REQUIRED OF OPERATORS

8.1 Took Kit review and implementation: The following is a brief description of each component of ALAR Tool Kit together with specific steps to be taken by all air operators concerning each component:

a) Standard Operating Procedures Template - contains examples of subject areas which should be addressed within an operator's manual system. The list is not all inclusive and all of the items are not relevant to every operation. Nonetheless, the Template (which is derived from FAA Advisory Circular 120-71) is recognized by industry as being a valuable resource for identifying subject areas for which guidance should be provided to crew members and other operations personnel.

Required Action: Operators will review the content of the ALAR Tool Kit Standard Operating Procedures Template and compare to the guidance contained in their manual system. If there are subject areas listed in the Template which are relevant to the operator's circumstances and for which guidance is lacking or insufficient, operators will make changes or additions to their SOP as necessary.

b) Approach and Landing Risk Reduction Guide - contains a checklist, in four sections, which should be reviewed by chief pilots, line pilots, dispatchers, or schedulers as specified in the introduction to each section. It is a strategic (long term) planning tool to evaluate specific flight operations and to improve crew awareness concerning ALAs.

Required Action: Operators will complete the checklists contained in the ALAR Tool Kit Risk Reduction Guide in order to identify possible shortcomings in organization, equipment, and training. Where shortcomings are indicated, operators will take corrective action.

c) ALAR Briefing Notes: contains 34 documents, on a variety of subject areas, which are based upon the conclusions and recommendations of the ALAR Task Force. The briefing notes were developed as an aid to education and training and can be used by airline management and flight operations professionals. Provided that they do not conflict with current company SOP, a number of the briefing notes may be used “as is” to convey useful information to line pilots. For chief pilots and other management personnel, the briefing notes serve as an additional tool to evaluate the adequacy of an operator's organization, policies, and procedures which have a direct bearing on approach and landing accident reduction.

Required Action: Operators will review the content of the ALAR Briefing Notes and decide to what extent the content of each note can be incorporated into company manuals and/or used in training and safety awareness programmes. When the content of a briefing note is relevant to an operator's specific operation, the information in the note will be made available to flight operations personnel in some form. When the information, recommendations, or procedures contained in any note (provided that the note is relevant to the operator's specific operation) conflicts with current SOP, the operator will either modify the information contained in the note before making it available to flight operations personnel or modify their SOPs in consideration of the information presented in the note.

d) Approach and Landing Risk Awareness Tool - A one page (two-sided) document designed to assist flight crews in evaluating risk factors associated with each approach and landing. This tool is intended for use in the cockpit to supplement the normal approach briefing in order to increase the awareness of hazards associated with a particular approach.

Required Action: Operators will review the Approach and Landing Risk Awareness Tool and consider incorporating it in its SOP as an additional briefing item prior to approach. It is recognized that cockpit crews already have a high workload prior to descent, particularly on short sectors, and this may dictate against using the Tool on a routine basis. If the operator considers it impractical to use the Tool routinely as an additional briefing item, it should nonetheless be distributed to crews for their information, included in the cockpit as an additional resource, and made part of training programmes and check flight briefings in order to increase ALA awareness among flight crews.

e) CFIT Checklist - A checklist, divided into three parts, in which numerical values are assigned by the operator to various factors which have a bearing upon the CFIT posture of the airline. A numerical total is calculated to arrive at a CFIT Risk Score. A negative Risk Score will serve to highlight factors in the operation which may require attention in order to reduce the risk of CFIT. This tool has been available for a number of years.

Required Action: Operators who have not already done so will follow the CFIT Checklist to calculate a CFIT Risk Score for their operation(s) and will address areas of weakness which are brought to light by the Checklist.

8.2 ALAR Training: Approved operator training programmes will reflect the following provisions: ALAR classroom training will be provided to all flight crew members for the purpose of increasing awareness of ALA causes and means of prevention. Such training will be designed in consideration of all of the major items contained in the ALAR Tool Kit. Every flight crew member will receive at least one 4 hour block of classroom training at least one time, either as a stand-alone training segment or in connection with another category of training such as initial, upgrade, or transition training. An appropriate training segment on ALAR (number of hours not specified) will also be included in recurrent ground training programmes for flight crew members. ALAR awareness may also be increased by incorporating ALAR items in flight simulator training segments, proficiency check briefings, briefings for line checks, etc. The major tools in the ALAR Tool Kit which are summarised above provide a wealth of information which can be used in training programmes. Additionally, there are a number of other items contained in the ALAR. Tool Kit which are will be highly useful in the development of an ALAR training programme. These include:

a) ALAR Operations Training - Data, procedures, and recommendations for pilots presented on 32 slides with explanatory notes.

b) An Approach and Landing Accident: “It Could Happen to You” - A 19-minute video presentation of specific data, findings and recommendations generated by FSF ALAR Task Force studies.

c) Pilot Guide to Preventing CFIT-CFIT accident data and lessons learned, plus a review of approach obstruction-protection criteria, presented on 43 slides with explanatory notes.

d) CFIT Awareness and Prevention - A 32-minute video presentation of CFIT statistics, plus analyses of three representative CFIT accidents and how they might have been avoided.

e) Air Traffic Control Communication - Improving pilot-controller communication and understanding of each other's operating environments, presented on 22 slides with explanatory notes.

f) Selected Flight Safety Foundation Publications - A large reference library containing previously published FSF articles concerning ALAs and CFIT.

9. IMPLEMENTATION TRACKING

9.1 Department of Civil Aviation will track the progress of Myanmar air operators in implementing the ALAR Tool Kit and ALAR training. Operators are required to submit to the DCA, on a quarterly basis, the ALAR Tool Kit Implementation Report (Attachment 'A' to this AC), indicating the extent to which each tool is being implemented and the rationale, if applicable, concerning modification of a tool or decision not to adopt a tool. Such reports are to be submitted until all steps which are to be taken are completed.

9.2 The completed reports should be submitted to:

Flight Check Division
Department of Civil Aviation (Myanmar)
Yangon International Airport
Mingaladon, Yangon, 11021

9.3 Re: ALAR Tool Kit Implementation Report

Director General
Department of Civil Aviation

ALAR Tool Kit Implementation Report

a. This form is designed to assist the DCA and the Team Leader of the Southeast Asia Regional Aviation Safety Team (SEARAST) in tracking the implementation of Approach and Landing Accident.

b. Reduction measures (using the FSF ALAR Tool Kit) among air operators in Southeast Asia.

c. Please submit the form to the DCA on a quarterly basis until all steps which are to be taken are completed.

d. Please include comments concerning your experience in the implementation of any Tool contained in the Kit; particularly if you found it to be inappropriate for application in your operation.

Name of Operator	Base of Operations (City)	e-mail address	Contact Person	Data
	Yangon			

1. SOP Template

Reviewed (Approx %)	Changes made to my SOP, if any. (List subject areas which have been added or modified as a result of SOP template review)

Comments on SOP Template:

2. ALAR Risk Reduction Guide

Reviewed (list by part)	Shortcomings identified (summarise)	Actions taken as a result of shortcomings identified (summarise)

Comments on ALAR Risk Reduction Guide:

3. Approach and Landing Risk Awareness Tool

Reviewed (yes/no)	Incorporated		
	Placed in cockpit (yes/no)	Required Approach Briefing (yes/no)	Other (used in training programme etc.)

Comments on Approach and Landing Risk Awareness Tool:

4. ALAR Briefing Notes

Briefing Note #	Reviewed (yes/no)	Utilised (yes/no) If yes, in what form (made part of SOP, used in training briefing etc.)	Comments
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Comments on ALAR Briefing Notes:

5. CFIT Checklist

Reviewed/Completed (yes/no)	Changes made to SOP, equipment etc. (summarise)

Comments on CFIT Checklist:

6. Training Programme

Operator training and checking programmes will be modified to incorporate ALAR elements and will be approved by the regulatory authority in accordance with regulations and existing policies. The table below is for the purpose of briefly summarising the nature of specific ALAR training elements which have been incorporated in the operator's approved training programme.

Training Category	Briefly describe training elements which have been incorporated
Initial	
Recurrent Ground	
Recurrent Flight	
Other	

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GUIDANCE FOR OPERATORS ON TRAINING PROGRAMMES FOR THE USE OF TERRAIN AWARENESS AND WARNING SYSTEM (TAWS)

1. PURPOSE

1.1 This Circular contains performance-based training objectives for Terrain Awareness and Warning System (TAWS) pilot training.

1.2 The training Objectives cover five areas: theory of operation; pre-flight operations; general in-flight operations; response to TAWS cautions; and response to TAWS Warnings.

1.3 The term “TAWS” in this Circular means a Ground Proximity Warning System (GPWS) enhanced by a forward looking terrain avoidance function. “Alerts” include both “cautions” and “warnings”.

1.4 The contents of this AC are intended to assist operators who are required to develop and conduct Circular training programmes. The information it contains has not been tailored to any specific aeroplane or TAWS equipment, but highlights features typically available where such systems are installed. It is the responsibility of each individual operator to determine the applicability of the contents of this Circular to each aeroplane and TAWS equipment installed, and their operation. Operators should refer to their Aeroplane Flight Manual and/or Aeroplane/Flight Crew Operating Manual for information applicable to specific configurations. If there should be any conflict between the contents of this Circular and those published in the other documents described above, then information contained in the AFM or A/FCOM will take precedence over that contained in this Circular.

2. RELATED CIVIL AVIATION REGULATIONS

a) The Union of Myanmar Aircraft Act (1934)
b) The Union of Myanmar Aircraft Rules (1937)

3. BACKGROUND

3.1 The introduction of ground proximity warning system (GPWS) equipment in 1978 resulted in a significant reduction in controlled flight into terrain (CFIT) accidents. However, CFIT accidents do still occur, not only to those aeroplanes that have no GPWS, but also to GPWS-equipped aeroplanes that encounter terrain rising too rapidly ahead of them or that descend below a safe approach path when in a landing configuration. It was with these shortcomings in mind that avionics manufacturers developed a solution to which the International Civil Aviation Organisation (ICAO) responded by publishing Standards and Recommendations concerning retrofit action it believes can or should be taken.

3.2 GPWS feeds inputs to its computer from a downwards-looking radio altimeter, an air data computer, an instrument landing system (ILS) glide slope signal, and flap and gear selector lever positions: its outputs include visual and aural alerts and warnings when it detects by rate-of-change of position that the aircraft is closing with terrain. To satisfy the ICAO requirement that GPWS should now include a predictive terrain hazard warning function, a terrain awareness and warning system has recently been developed. The predictive function is achieved by feeding the aeroplane's known position (as determined by a flight management system (FMS) or by a global positioning system (GPS)) to a terrain data base, enabling the computer to predict terrain ahead and to the side of the aeroplane's flight path. Terrain features can then be displayed to the flight crew. TAW therefore overcomes

shortcomings associated with GPWS in that it produces earlier alerts and warnings of significant terrain that lie ahead at all stages of flight. Furthermore, with reference to terrain around airfields, it can warn of descent below safe vertical profiles when the aircraft is in a landing configuration and there is no ILS glide slope signal present. Pilots' situational awareness is greatly improved by means of terrain features displayed before them. This displayed information, related to flight path and altitude, means that the alerting and warning capabilities TAWS possesses are less likely to be needed than if GPWS alone were installed. (Note: the acronym EGPWS (Enhanced GPWS) that has been in use for some time describes only one TAWS solution - other solutions are now in the course of development or in production.)

4. SCOPE

4.1 The scope of this AC is designed to identify training objectives in the areas of: academic training; manoeuvre training; initial evaluation; and recurrent qualification. Under each of these four areas, the training material has been separated into those items which are considered essential training items and those which are considered desirable. In each area, objectives and acceptable performance criteria are defined.

4.2 No attempt is made to define how the training programme should be implemented. Instead, objectives are established that define the knowledge a pilot operating TAWS is expected to possess and the performance expected from a pilot who has completed TAWS training. However, the guidelines do indicate those areas in which the pilot receiving the training should demonstrate his/her understanding, or performance, using a real-time, interactive training device, i.e. a flight simulator. Where appropriate, notes are included within the performance criteria which amplify or clarify the material addressed by the training objective.

5. PERFORMANCE BASED TRAINING OBJECTIVES

5.1 TAWS Academic Training

This training is typically conducted in a classroom environment. The knowledge demonstrations specified in this section may be completed through the successful completion of written tests or by providing correct responses to non real-time computer based training (CBT) questions.

5.1.1 Theory of operation

The pilot should demonstrate an understanding of TAWS operation and the criteria used for issuing cautions and warnings. This training should address the following topics:

5.1.1.1 <u>System Operation</u>

Objective: To demonstrate knowledge of how TAWS functions.

Criteria: The pilot must demonstrate an understanding of the following functions:

(i) Surveillance

The GPWS computer processes data supplied from an air data computer, a radio altimeter, an ILS/MLS/MM (multi-mode) receiver, a roll attitude sensor, and flap and gear selector position sensors.

The forward looking terrain avoidance function utilises an accurate source of known aircraft position, such as may be provided by a flight management system (FMS) or global positioning system (GPS), and an electronic terrain database. The source and scope of the terrain, obstacle and airport data, and features such as the terrain clearance floor, the runway picker, and geometric altitude (where provided) should all be described.

Displays required to deliver TAWS outputs include a loudspeaker for voice announcements, visual alerts (typically amber and red lights), and a terrain awareness display (that may be combined with other displays). In addition, means must be provided for indicating the status of TAWS and any partial or total failures that may occur.

(ii) Terrain Avoidance

Outputs from the TAWS computer provide visual and audio synthetic voice cautions and warnings to alert the flight crew about potential conflicts with terrain and obstacles.

5.1.1.2 Alert Thresholds

Objective: To demonstrate knowledge of the criteria for issuing cautions and warnings.

Criteria: The pilot should be able to demonstrate an understanding of the methodology used by TAWS to issue cautions and alerts and the general criteria for the issuance of these alerts to include:

- Basic GPWS alerting modes specified in the ICAO Standard:

  Mode 1: excessive sink rate;
  Mode 2: excessive terrain closure rate:
  Mode 3: descent after take-off or go-around;
  Mode 4: unsafe proximity to terrain;
  Mode 5: descent below ILS glide slope (caution only).

- An additional, optional alert mode:

  Mode 6: radio altitude call-out (information only).

- TAWS cautions and warnings that alert the flight crew to obstacles and terrain ahead of the aircraft in line with or adjacent to its projected flight path (forward looking terrain avoidance (FLTA) and premature descent alert (PDA) functions).

5.1.1.3 TAWS Limitations

Objective: To verify that the pilot is aware of the limitations of TAWS.

Criteria: The pilot should demonstrate a knowledge and understanding of TAWS limitations identified by the manufacturer for the equipment model installed. Items might include:

- Navigation is not to be predicated on the use of the terrain display.

- Unless geometric altitude data is provided, use of predictive TAWS functions is prohibited when altimeter sub-scale settings display QFE.

- Nuisance alerts can be issued if the aerodrome of intended landing is not included in the TAWS airport database.

- In cold weather operations, corrective procedures should be implemented by the crew unless TAWS has in-built compensation such as geometric altitude data.

- Loss of input data to the TAWS computer could result in partial or total loss of functionality. Where means exist to inform the crew that functionality has been degraded, this should be known and the consequences understood.

- Radio signals not associated with the intended flight profile (e.g. ILS glide path transmissions from an adjacent runway) may cause false alerts.
- Inaccurate or low accuracy aircraft position data could lead to false or non annunciation of terrain or obstacles ahead of the aircraft.

- MEL restrictions should be applied in the event that TAWS becomes partially or completely unserviceable. (It should be noted that basic GPWS has no forward-looking capability.)

5.1.1.4 TAWS Inhibits

Objective: To verify that the pilot is aware of the conditions under which certain functions of TAWS are inhibited.

Criteria: The pilot should demonstrate knowledge and understanding of the various TAWS inhibits including:

- A means of silencing voice alerts;
- A means of inhibiting ILS glide path signals (as may be required when executing a ILS back beam approach);
- A means of inhibiting flap position sensors (as may be required when executing an approach with the flaps not in a normal position for landing);
- A means for inhibiting the FLTA and PDA functions;
- A means for selecting or deselecting the display of terrain information;
- Together with appropriate annunciation of the status of each selection.

5.1.2 **Operating Procedures**

The pilot should demonstrate the knowledge required to operate the TAWS avionics and interpret the information presented by TAWS. This training should address the following topics:

5.1.2.1 Use of controls

Objective: To verify that the pilot can properly operate all TAWS controls and inhibits.

Criteria: Demonstrate the proper use of controls including:

- The means by which, before flight, any equipment self-test functions can be initiated
- The means by which TAWS information can be selected for display;
- The means by which all TAWS inhibits can be operated and what the consequent annunciation mean with regard to loss of functionality.

5.1.2.2 Display Interpretation

Objective: To verify that a pilot understands the meaning of all information that can be annunciated or displayed by TAWS.

Criteria: The pilot should demonstrate the ability to properly interpret information annunciated or displayed by TAWS including:

- Knowledge of all visual and aural indications that may be seen or heard;
- Response required on receipt of a caution;
- Response required on receipt of a warning;

- Response required on receipt that partial or total failure of TAWS has occurred (including annunciation that the present aircraft position is of low accuracy).

5.1.2.3 Use of Basic GPWS or Use of the Forward Looking Terrain Avoidance Function Only

Objective: To verify that a pilot understands what functionality will remain following loss of the GPWS or of the forward looking terrain avoidance function.

Criteria: The pilot should demonstrate knowledge of the following:

- How to recognise uncommanded loss of the GPWS function, or how to isolate this function, and what level of CFIT protection then remains (essentially, the forward looking terrain avoidance function).

- How to recognise uncommanded loss of the forward looking terrain avoidance function, or how to isolate this function, and what level of CFIT protection then remains (essentially, basic GPWS).

5.1.2.4 Crew Co-ordination

Objective: To verify that the pilot adequately briefs other crew members on how TAWS alerts will be handled.

Criteria: The pilot should demonstrate that the pre-flight briefing addresses procedures that will be used in preparation for responding to TAWS cautions and warnings including:

- What action will be taken, and by whom, in the event that a TAWS caution and/or warning is issued.

- How multi-function displays will be used to depict TAWS information at take-off, in the cruise, and for the descent, approach, landing (and any go-around). (This will be in accordance with procedures specified by the operator, who will recognize both that it may be more desirable that other data is displayed at certain phases of flight, and that the terrain display has an automatic 'pop-up' mode in the event that an alert is issued.)

5.1.2.5 Reporting Requirements

Objective: To verify that the pilot is aware of the requirements for reporting alerts to the controller and other authorities.

Criteria: The pilot should demonstrate the following:

- When, following recovery from a TAWS alert or caution, any transmission of information should be made to the appropriate air traffic control unit;

- What written report is required t o be made, how it is to be made, and whether any cross-reference should be made in the aircraft technical log and/or voyage report (in accordance with procedures specified by the operator) following a flight in which the aircraft flight path has been modified in response to a TAWS alert, or if any part of the equipment appears not to have functioned correctly.

5.1.2.6 Alert Thresholds

Objective: To demonstrate knowledge of the criteria for issuing cautions and warnings.

Criteria: The pilot should be able to demonstrate an understanding of the methodology used by TAWS to issue cautions and warnings and the general criteria for the issuance of these alerts to include:

- Awareness of the modes associated with basic GPWS including the input data associated with each.

- Awareness of the visual and aural annunciations that can be issued by TAWS, and how to identify which are cautions and which are warnings.

5.2 TAWS Manoeuvre Training

The pilot should demonstrate the knowledge required to respond correctly to TAWS cautions and warnings. This training should address the following topics:

5.2.1 Response to Cautions

Objective: To verify that the pilot properly interprets and responds to cautions.

Criteria: The pilot should demonstrate that he understands the need, without delay:

- To initiate action required to correct the condition that has caused TAWS to issue the caution and to be prepared to respond to a warning if this should follow.

- If a warning does not follow the caution, to notify the controller of the new position, heading and/or altitude/flight level of the aircraft, and what the commander intends to do next.

- The proper response to a caution might require the pilot:

- to reduce a rate of descent and/or to initiate a climb;

- to regain an ILS glide path from below, or to inhibit a glide path signal if an ILS is not being flown;

- to select more flap, or to inhibit a flap sensor if the landing is being conducted with the intent that the normal flap setting will not be used;

- to select gear down;

- to initiate a turn away from the terrain or obstacle ahead and towards an area free of such obstructions if a forward looking terrain display indicates this to be a good solution and the entire manoeuvre can be carried out in clear visual conditions.

5.2.2 Response to Warnings

Objective: To verify that the pilot properly interprets and responds to warnings.

Criteria: The pilot should demonstrate that he understands the need, without delay:

- To initiate a climb in the manner specified by the operator, and

- to maintain the climb until visual verification can be made that the aircraft will clear the terrain or obstacle ahead, or until above the appropriate sector safe altitude (if certain as to the location of the aircraft with respect to terrain) even if the TAWS warning stops. If, subsequently, the aircraft climbs up through the sector safe altitude but the visibility does not allow the crew to confirm that the terrain hazard has ended, checks should be made to verify the location of the aircraft and to confirm that the altimeter subscale settings are correct,

- Also, and when the workload permits, the crew should notify the controller of the new position and altitude/flight level, and what the commander intends to do next.

- The manner in which the climb should be made will reflect the type of aircraft and the method specified by the aircraft manufacturer (but reflected in the operations manual) for performing the escape manoeuvre. Essential aspects will include the need for an increase in pitch attitude, selection of maximum thrust, confirmation that external sources of drag (e.g.

spoilers/speed brakes) are retracted, and respect of the stick shaker or other indication of eroded stall margin.

- TAWS warnings must never be ignored. However, the pilot's response may be limited to that appropriate for a caution only if the aeroplane is being operated by day in clear visual conditions, and it is immediately obvious to the pilot that the aircraft is in no danger in respect of its configuration, proximity to terrain or current flight path.

5.2.3 TAWS Initial Evaluation

5.2.3.1 Pilot understanding of the academic training items should be assessed by means of a written test.

5.2.3.2 Pilot understanding of the manoeuvre training items should be assessed in a flight simulator (if available) equipped with TAWS visual and aural displays and inhibit selectors similar in appearance and operation to those in the aircraft the pilot will fly, and the results assessed by a synthetic flight instructor, synthetic flight examiner, type rating instructor or type rating examiner.

5.2.3.3 The range of scenarios should be designed to give confidence that proper and timely responses to TAWS cautions and warnings will result in the aircraft avoiding a CFIT accident. To achieve this objective, the pilot should demonstrate taking the correct action to prevent a caution developing into a warning and, separately, the escape manoeuvre needed in response to a warning. These demonstrations should take place when the external visibility is zero, though there is much to be learnt if, initially, the training is given in 'mountainous' or 'hilly' terrain with clear visibility. This training should comprise a sequence of scenarios, rather than be included in line orientated flying training (LOFT).

5.2.3.4 A record should be made, after the pilot has demonstrated competence, of the scenarios that were practised.

5.2.4 TAWS Recurrent Training (Annual)

5.2.4.1 TAWS recurrent training ensures that pilots maintain the appropriate TAWS knowledge and skills. In particular, it reminds pilots of the need to act promptly in response to cautions and warnings, and of the unusual attitude associated with flying the escape manoeuvre.

5.2.4.2 An essential item of recurrent training is the discussion of any significant issues and operational concerns that have been identified by the operator. Recurrent training should also address changes to TAWS logic, parameters or procedures and to any unique TAWS characteristics of which pilots should be aware.

6. REPORTING PROCEDURES

6.1 Verbal Reports

6.1.1 Verbal reports should be made promptly to the appropriate air traffic control unit:

- Whenever any manoeuvre has caused the aircraft to deviate from an air traffic clearance;

- When, subsequent to a manoeuvre that has caused the aircraft to deviate from an air traffic clearance, the aircraft has returned to a flight path that complies with the clearance;

- When air traffic issue instructions that, if followed, would cause the crew to manoeuvre the aircraft towards terrain or obstacle that, it would appear from the display that a potential CFIT occurrence is likely to result.

6.2 **Written Reports**

6.2.1 Written reports should be submitted in accordance with the operator's occurrence reporting scheme:

- Whenever the aircraft flight path has been modified in response to a TAWS alert (false, nuisance or genuine).

6.2.2 Written reports should be made in the aircraft technical log:

- Whenever a TAWS alert has been issued and is believed to have been false; or,

- if it is believed that a TAWS alert should have been issued but was not.

6.3. Within this Circular, and with regard to reports:

- The term 'false' means that TAWS issued an alert that could not possibly be justified by the position of the aircraft in respect to terrain, and it is probable that a fault or failure in the system (equipment and/or input data) has been the cause.

- The term 'nuisance' means that TAWS issued an alert that was appropriate but not needed because the flight crew could determine by independent means that the flight path was at that time safe;

- The term 'genuine' means that TAWS issued an alert that was both appropriate and ' necessary.

6.4 These terms have value in assessing, only after the occurrence is over and to facilitate subsequent analysis, the adequacy of the equipment and the programs it contains. It is not intended that flight crew should attempt t o classify an alert into any of these three categories when visual and/or aural cautions or warnings are annunciated.

7. APPLICABILITY

7.1 All Operators who are required to operate aeroplanes equipped with TWAS as per the requirements of the Civil Aviation Regulations must ensure the flight crew are provided the minimum training and follow procedures as stipulated in this AC. The Operator is required to maintain relevant records of all ground and simulator training provided to the flight crew for perusal by the DCA as and when required.

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AIC

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STANDARD OPERATING PROCEDURES FOR FLIGHT DECK CREW MEMBERS

1. PURPOSE

1.1 Standard operating procedures (SOPs) are universally recognized as basic to safe aviation operations. Effective crew coordination and crew performance, two central concepts of crew resource management (CRM), depend upon the crew's having a shared mental model of each task. That mental model, in turn, is founded on SOPs. This Circular presents background, basic concepts, and philosophy in respect to SOPs. It emphasizes that SOPs should be clear, comprehensive, and readily available in the manuals used by flight deck crew members.

1.2 This AC is designed to provide advice and recommendations about development, implementation, and updating of SOPs. Many important topics that should be addressed in SOPs are provided in Appendix 1, Standard Operating Procedures Template. Stabilized Approach, characterized by a constant-angle, constant-rate of descent ending near the touchdown point, where the landing manoeuvre begins, is among the SOPs specifically identified in this AC, and is described in Appendix 2, Stabilized Approach: Concepts and Terms.

1.3 AOC holders should refer to the Template in Appendix 1, to Stabilized Approach in Appendix 2, ATC Instructions in Appendix 3, Crew Briefings in Appendix 4 and to the aircraft manufactures recommended procedures in developing comprehensive SOPs for use in training programs and in manuals used by their flight deck crew members.

2. SCOPE

2.1 Appendix 1 consolidates many topics viewed by operators and by the DCA as important, to be addressed as SOPs in air operator training programs and in the manuals used by air operator flight deck crew members.

2.2 This AC does not list every important SOP topic or dictate exactly how each topic should be addressed by an AOC holder. Instead, this AC offers a baseline of topics, to be used as a reference. In practice, each AOC holder's manuals and training programs are unique. Each AOC holder could omit certain topics shown in the template when they do not apply, and, on the other hand, could add other topics not shown in the template when they do apply.

2.3 This AC contains guidance intended for use primarily by Air Operator Certificate holders authorized to conduct operations in accordance with The Union of Myanmar Aircraft Rules (1937).

3. RELATED REGULATIONS

a) The Union of Myanmar Aircraft Act (1934)
b) The Union of Myanmar Aircraft Rules (1937)

4. RELATED READING MATERIAL

4.1 Approach-and-landing Risk Awareness Tool (Ref. AIC 01/07).

4.2 CFIT Checklist (Ref. AIC 02/07)

4.3 Human Performance Considerations in the Use and Design of Aircraft Checklists in accordance with ICAO PANS/OPS Document 8168 and ICAO Human Factors Training Manual Document 9683.

5. BACKGROUND

5.1 For many years the International Civil Aviation Organization (ICAO) has identified deficiencies in standard operating procedures as contributing causal factors in aviation accidents. Among the most commonly cited deficiencies involving flight crews has been their non-compliance with established procedures; another has been the non-existence of established procedures in some manuals used by flight crews.

5.2 The ICAO has recognized the importance of SOPs for safe flight operations. Recent amendments to ICAO Annex 6 and PANS OPS Document 8168, Vol. I, establish that each Member State shall require that SOPs for each phase of flight be contained in the operations manual used by pilots.

5.3 Many Aviation Safety Organizations have concluded that Air Operators perform with higher levels of safety when they establish and adhere to adequate SOPs.

5.4 A study of CFIT accidents found almost 50 percent of the 107 CFIT interventions identified by an analysis team related to the flight crew's failure to adhere to SOPs or the AOC holder's failure to establish adequate SOPs.

6. THE MISSION OF SOPs

6.1 To achieve consistently safe flight operations through adherence to SOPs that are clear, comprehensive, and readily available to flight crew members.

7. APPLYING THE SOPs TEMPLATE AND OTHER APPENDICES

7.1 Generally, each SOP topic identified in the template (following as Appendix 1) is important and should be addressed in some manner by the AOC holder, if applicable. Stabilized Approach (Appendix 2) is a particularly important SOP. Other important SOPs, such as those associated with special operating authority or with new technology, are not shown in the template, but should be addressed as well, when applicable. Because each AOC holder's operation is unique, developing the specific manner in which SOPs are addressed is the task of the AOC holder. Topics expanded and illustrated in the Appendices are for example only, and represent renditions of SOPs known to be effective. No requirement is implied or intended to change existing SOPs based solely on these examples. An SOP topic shown in the Appendices may be addressed in detail, including text and diagrams, or in very simple terms. For example, an SOP may be addressed in a simple statement such as: “ABC Airlines does not conduct Category 3 approaches.”

8. KEY FEATURES OF EFFECTIVE SOPs

8.1 Many experts agree that implementation of any procedure as an SOP is most effective if:

8.1.1 The procedure is appropriate to the situation.

8.1.2 The procedure is practical to use.

8.1.3 Crew members understand the reasons for the procedure.

8.1.4 Pilot Flying (PF), Pilot Not Flying (PNF), and Flight Engineer duties are clearly delineated.

8.1.5 Effective training is conducted.

8.1.6 The attitudes shown by instructors, check pilots, and managers all reinforce the need for the procedure.

8.2 If all elements (above) are not consistently implemented, flight crews too easily become participants in an undesirable double standard condoned by instructors, check pilots, and managers. Flight crews may end up doing things one way to satisfy training requirements and check rides, but doing them another way in "real life" during line operations. When a double standard does appear in this way, it should be considered a red flag that a published SOP may not be practical or effective for some reason. That SOP should be reviewed and perhaps changed.

9. THE IMPORTANCE OF UNDERSTANDING THE REASONS FOR AN SOP

9.1 **Effective Feedback.**

9.1.1 When flight crew members understand the underlying reasons for an SOP they are better prepared and more eager to offer effective feedback for improvements. The AOC holder, in turn, benefits from more competent feedback in revising existing SOPs and in developing new SOPs. Those benefits include safety, efficiency, and employee morale.

9.2 **Troubleshooting.**

9.2.1 When flight crew members understand the underlying reasons for an SOP, they are generally better prepared to handle a related in-flight problem that may not be explicitly or completely addressed in their operating manuals.

10. COLLABORATING FOR EFFECTIVE SOPs

10.1 In general, effective SOPs are the product of healthy collaboration among managers and flight operations people, including flight crews. A safety culture promoting continuous feedback from flight crews and others, and continuous revision by the collaborators distinguishes effective SOPs at air operators of all sizes and ages.

10.2 New operators, operators adding a new aircraft fleet, or operators retiring one aircraft fleet for another must be especially diligent in developing SOPs. Collaborators with applicable experience may be more difficult to bring together in those instances.

10.3 For a start-up AOC holder, this AC and its Appendices should be especially valuable tools in developing SOPs. The developers should pay close attention to the approved airplane flight manual (AFM), to AFM revisions and operations bulletins issued by the manufacturer. Desirable partners in the collaboration would certainly include representatives of the airplane manufacturer, pilots having previous experience with the airplane or with the kind of operations planned by the operator, and representatives from the DCA. It is especially important for a new operator to maintain a periodic review process that includes line flight crews. Together, managers and flight crews are able to review the effectiveness of SOPs and to reach valid conclusions for revisions. The review process will be meaningful and effective when managers promote prompt implementation of revisions to SOPs when necessary.

10.4 An existing AOC holder introducing a new airplane fleet should also collaborate using the best resources available, including the AFM and operations bulletins. Experience has shown that representatives of the airplane manufacturer, managers, check pilot, instructors, and line pilots work well together as a team to develop effective SOPs. A trial period might be implemented, followed by feedback and revision, in which SOPs are improved. By being part of an iterative process for changes in SOPs, the end user, the flight crew member, is generally inclined to accept the validity of changes and to implement them readily.

10.5 Long-established operators should be careful not to assume too readily that they can operate an airplane recently added to the fleet in the same, standard way as older types or models. Managers, check pilot, and instructors should collaborate using the best resources available, including the AFM

and operations bulletins to ensure that SOPs developed or adapted for a new airplane are in fact effective for that aircraft, and are not inappropriate carry overs.

11. SUMMARY

11.1 Safety in commercial aviation continues to depend on good crew performance. Good crew performance, in turn, is founded on standard operating procedures that are clear, comprehensive, and readily available to the flight crew. This AC provides an SOPs template and many other useful references in developing SOPs. Development of SOPs is most effective when done by collaboration, using the best resources available including the end-users themselves, the flight crews. Once developed, effective SOPs should be continually reviewed and renewed.

Director General
Department of Civil Aviation

NOTES ON APPENDICES

The following appendices contain examples of standard operating procedures (SOPs) that are identical to or similar to some SOPs currently in use. Those examples do not represent a rigid DCA view of best practices, which may vary among fleets and among AOC holders, and may change over time.

Some of the examples may be readily adapted to a AOC holder's flight crew training and operating manuals for various airplane fleets.

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APPENDIX 1

STANDARD OPERATING PROCEDURES TEMPLATE

A manual or section in a manual serving as the flight crew's guide to standard operating procedures (SOPs) may double as a training guide. The content should be clear and comprehensive, without necessarily being lengthy. No template could include every topic that might apply unless it was constantly revised. Many topics involving special operating authority or new technology are absent from this template, among them ETOPS, PRM, SMGS, RNP, and many others. The following are nevertheless viewed by industry and DCA alike as examples of topics that constitute a useful template for developing comprehensive, effective SOPs:

Captain's authority

Use of automation

- The operator's automation philosophy

- Specific guidance in selection of appropriate levels of automation Autopilot/flight director mode control inputs

- Flight management systems inputs

Checklist philosophy

- Policies and procedures
  (Who calls for; who reads; who does)

- Checklist interruptions
- Checklist ambiguity
- Checklist couplings
- Checklist training

- Format and terminology
- Type of checklist
- Challenge-Do-Verify
- Do-Verify
- Walk-arounds

Checklists

- Safety check - power on
- Originating/receiving
- Before start
- After start
- Before taxi
- Before take-off
- After take-off
- Climb check
- Cruise check
- Preliminary landing
- Landing
- After landing
- Parking and securing
- Emergency procedures
- Non-normal/abnormal procedures

Communications

- Who handles radios
- Primary language used
- ATC
- On the flight deck
- Keeping both pilots in the loop
- Company radio procedures
- Flight deck/cabin signals
- Cabin/flight deck signals

Briefings

- CFIT risk considered
- Special airport qualifications considered
- Temperature corrections considered
- Before takeoff
- Descent/approach/missed approach
- Approach briefing general done prior to beginning of descent
- Flight deck access
- On ground/in flight
- Jump seat
- Access signals, keys

Flight deck discipline

- Sterile cockpit
- Maintaining outside vigilance
- Monitoring / Cross checking
- Transfer of Control
- Additional duties
- Flight kits
- Headsets/speakers
- Boom mikes/handsets
- Maps/approach charts
- Meals

Altitude awareness

- Altimeter settings
- Transition level
- Callouts (verification of)
- Minimum safe altitudes (MSA)
- Temperature corrections
- Monitoring during last 1000 feet of altitude change

Report times

- Check in/show up
- On flight deck
- Checklist accomplishment

Maintenance procedures

- Logbooks/previous write-ups
- Open write-ups
- Notification to maintenance of write-ups
- Minimum equipment list (MEL)
- Where it is accessible
- Configuration Deviation List (CDL)
- Crew coordination in ground de-icing

Flight plans/dispatch procedures

- VFR/IFR
- Icing considerations
- Fuel loads
- Weather package
- Where weather package is available
- Departure procedure climb gradient analysis

Boarding passengers/cargo

- Carry-on baggage
- Exit row seating
- Hazardous materials
- Prisoners/escorted persons
- Guns onboard
- Count/load

Pushback/powerback

Taxiing

- All engines running
- Less than all engines running
- On ice or snow or heavy rain
- Low visibility
- Prevention of runway incursion

Crew resource management (CRM)

- Crew briefings
- Cabin Crew
- Flight crew

Weight & balance/cargo loading

- Who is responsible for loading cargo, and securing cargo
- Who prepares the weight & balance data form; who checks it
- Copy to crew

Flight deck/cabin crew interchange

- Boarding
- Ready to taxi
- Cabin emergency
- Prior to take-off/landing

Take-off

- PF/PNF duties and responsibilities
- Who conducts it?
- Briefing, IFR/VFR
- Reduced power procedures
- Tailwind, runway clutter
- Intersections/land and hold short procedures (LAHSO)
- Noise abatement procedures
- Special departure procedures
- Flight directors
- Use of: Yes/No
- Callouts
- Clean up
- Loss of engine
- Transfer of controls - if appropriate
- Rejected takeoff
- After V1
- Actions/callouts
- Flap settings
- Normal
- Nonstandard and reason for
- Crosswind
- Close-in turns

Climb

- Speeds
- Configuration
- Confirm compliance with climb gradient required in departure procedure
- Confirm appropriate cold temperature corrections made

Cruise altitude selection

- Speeds/weights

Position reports/ pilot weather reports

- ATC - including pilot report of hazards such as icing, thunderstorms and turbulence
- Company

Emergency descents

Holding procedures

- Procedures for diversion to alternate

Normal descents

- Planning and discussing prior to beginning of descent point
- Risk assessment and briefing
- Speed brakes: Yes/No
- Flaps/gear use
- Icing considerations
- Convective activity

Ground proximity warning system (GPWS or TAWs)

- Escape manoeuvre

TCAS

Windshear

- Avoidance of likely encounters
- Recognition
- Recovery / escape manoeuvre

Approach philosophy

- Monitoring during approaches
- Precision approaches preferred
- Stabilized approaches standard
- Use of navigation aids
- Flight management system (FMS)/autopilot
- Use, and when to discontinue use
- Approach gates
- Limits for stabilized approaches
- Use of radio altimeter
- Go-around: Plan to go around; change plan to land when visual, if stabilized

Individual approach type

- All types, including engine-out

For each type of approach

- Profile
- Airplane configuration for conditions
- Visual Approach
- Low visibility
- Contaminated runway
- Flap/gear extension
- Auto spoiler and auto brake systems armed and confirmed armed by both pilots, in accordance with manufactures recommended procedures (or equivalent approved company procedures)
- Procedures - Actions and Callouts

Go-around / missed approach

- When stabilized approach gates are missed
- Procedure - Actions and Callouts
- Clean-up profile

Landing

- Actions and callouts during landing
- Close-in turns
- Crosswind
- Rejected
- Actions and Callouts during rollout
- Transfer of control after first officer landing

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APPENDIX 2

STABILIZED APPROACH: CONCEPTS AND TERMS

A stabilized approach is one of the key features of safe approaches and landings in air operator operations, especially those involving transport category airplanes.

A stabilized approach is characterized by a constant-angle, constant-rate of descent approach profile ending near the touchdown point, where the landing manoeuvre begins. A stabilized approach is the safest profile in all but special cases, in which another profile may be required by unusual conditions.

All appropriate briefings and checklists should be accomplished before 1000' height above threshold (HAT) in instrument meteorological conditions (IMC), and before 500' HAT in visual meteorological conditions (VMC).

Flight should be stabilized by 1000' height above threshold (HAT) in instrument meteorological conditions (IMC), and by 500' HAT in visual meteorological conditions (VMC). An approach that becomes unstabilized below the altitudes shown here requires an immediate go-around.

An approach is stabilized when all of the following criteria are maintained from 1000' HAT (or 500' HAT in VMC) to landing in the touchdown zone:

- The airplane is on the correct[1] track.

- The airplane is in the proper landing configuration.

- After glide path intercept, or after the Final Approach Fix (FAF), or after the derived fly-off point (per Jeppesen) the pilot flying requires no more than normal bracketing corrections[2] to maintain the correct track and desired profile (3º descent angle, nominal) to landing within the touchdown zone. Level-off below 1000' HAT is not recommended.

The airplane speed is within the acceptable range specified in the approved operating manual used by the pilot.

The rate of descent is no greater than 1000 feet per minute (fpm).

- If an expected rate of descent greater than 1000 fpm is planned, a special approach briefing should be performed.

- If an unexpected, sustained rate of descent greater than 1000 fpm is encountered during the approach, a missed approach should be performed. A second approach may be attempted after a special approach briefing, if conditions permit.

Power setting is appropriate for the landing configuration selected, and is within the permissible power range for approach specified in the approved operating manual used by the pilot.

When no vertical guidance is provided: Vertical guidance may be provided to the pilot by way of an electronic glide slope, a computed descent path displayed on the pilot's navigation display, or other electronic means. On approaches for which no vertical guidance is provided, the flight crew should plan, execute, and monitor the approach with special care, taking into account traffic and wind conditions. To assure vertical clearance and situation awareness, the pilot not flying should announce crossing altitudes as published fixes and other points selected by the flight crew are passed. The pilot flying should promptly adjust descent angle as appropriate. A constant-angle, constant-rate descent profile ending at the touchdown point is the safest profile in all but special cases.

Visual contact. Upon establishing visual contact with the runway or appropriate runway lights or markings, the pilot should be able to continue to a safe landing using normal bracketing corrections, or, if unable, should perform a missed approach.

No visual contact. The operator may develop procedures involving an approved, standard MDA buffer altitude or other approved procedures to assure that descent below MDA does not occur during the missed approach. If no visual contact is established approaching MDA or an approved MDA buffer altitude, or if the missed approach point is reached, the pilot should perform the published missed approach procedure. Below 1000' HAT, levelling off at MDA (or at some height above MDA) is not recommended, and a missed approach should be performed.

Note [1]: **A correct track** is one in which the correct localizer, radial, or other track guidance has been set, tuned, and identified, and is being followed by the pilot.

Note [2]: **Normal bracketing corrections** relate to bank angle, rate of descent, and power management. Recommended ranges are as follows (operating limitations in the approved airplane flight manual must be observed, and may be more restrictive):

Course Guidance: Specific types of approach are stabilized if they also fulfil the following:

Instrument Landing Systems (ILS) must be flown within +/- one (1) dot of the glide slope and localizer; Category II or Category III ILS approach must be flown within the expanded localizer band; during a circling approach, wing should be level on final when the aircraft reaches 300 feet above the airport elevation; and, Unique approach procedures for abnormal conditions requiring a deviation from the above elements of a stabilized approach require a special briefing.

Bank angle: Maximum bank angle permissible during approach is specified in the approved operating manual used by the pilot, and is generally not more than 30º; the maximum bank angle permissible during landing may be considerably less than 30º, as specified in that manual.

Rate of descent: ±300 fpm deviation from target

Power management: Permissible power range is specified in the approved operating manual used by the pilot.

Overshoots: Normal bracketing corrections occasionally involve momentary overshoots made necessary by atmospheric conditions. Such overshoots are acceptable. Frequent or sustained overshoots caused by poor pilot technique are not normal bracketing corrections.

APPENDIX 3

ATC COMMUNICATIONS

and

ALTITUDE AWARENESS

ATC Communications: SOPs should state who (PF, PNF, FE/SO) handles the radios for each phase of flight and will read back to the air traffic controller the following ATC clearances and instructions; and air safety related information which are transmitted by voice:

a. ATC route clearances

b. Clearances and instructions to enter, land on, takeoff on, hold short of, cross and backtrack on any runway; and

c. runway-in-use, altimeter settings, SSR codes, level instructions, heading and speed instructions and, whether issued by the controller or contained in ATIS broadcasts, transition levels.

d. Other clearances or instructions including, conditional clearances, shall be read back or acknowledged in a manner to clearly indicate that they have been understood and will be complied with.

e. PF makes input to aircraft/autopilot and/or verbally states clearances while PNF confirms input is what he/she read back to ATC.

f. Any confusion in the flight deck is immediately cleared up by requesting ATC confirmation.

g. If any crew member is off the flight deck, all ATC instructions are briefed upon his/her return. Or if any crew member is off the flight deck all ATC instructions are written down until his/her return and then passed to that crew member upon return. Similarly, if a crew member is off ATC frequency (e.g., when making a PA announcement or when talking on company frequency), all ATC instructions are briefed upon his/her return.

h. Company policy should address use of speakers, headsets, boom mike and/or hand-held mikes.

i. Company personnel will comply with all standard ATC phraseology as referenced in ICAO PAN OPS, Annex 11 and PANS-ATM (Air Traffic Management Document 4444).

Altitude Awareness: SOPs should state the company policy on confirming assigned altitude.

Example: The PNF acknowledges ATC altitude clearance. If the aircraft is on the autopilot then the PF makes input into the autopilot/altitude alerter. PF points to the input while stating the assigned altitude, as he/she understands it. The PNF then points to the input stating aloud what he/she understands the ATC clearance to be confirming that the input and clearance match.

If the aircraft is being hand-flown then the PNF makes the input into the Altitude Alerter/autopilot, then points to the input and states clearance. PF then points to the alerter stating aloud what he/she understands the ATC clearance to be confirming that the alerter and clearance match.

Example: If there is no altitude alerter in the aircraft then both pilots write down the clearance, confirm that they have the same altitude and then cross off the previously assigned altitude.

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APPENDIX 4

CREW BRIEFINGS

Pilot Briefing

The purpose of the pilot briefing is to enhance communications on the flight deck and to promote effective teamwork. Each crew member is expected to perform as an integral part of the team. The briefing should establish a mutual understanding of the specific factors appropriate for the flight.

A pilot briefing will be given prior to starting engines for the first flight of the day (subsequent flight, if applicable). The captain determines the length and detail of the briefing. Factors to consider include:

- Experience level of the pilots
- Special MEL procedures as a result of inoperative components
- Altimeter setting units
- Use of delayed engine start and/or engine out taxi procedures

When personnel occupy the extra crew seat(s), ensure they understand the use of oxygen/interphone operations and emergency exits, and sterile flight deck procedures.

Take-off Briefing

A Takeoff Briefing will be given prior to takeoff. Factors to consider include:

- Takeoff weather conditions
- Runway surface conditions
- NOTAMs
- Departure review
- Obstructions and high terrain
- Close-out weight and balance message/takeoff numbers
- Critical conditions affecting the GO/NO GO decision (e.g., gross weight limited takeoff, wet or slippery runway, crosswind, aircraft malfunctions)
- Birdstrike potential, if applicable.

Cabin Crew Briefing

The purpose of the cabin crew briefing is to develop a team concept between the flight deck and cabin crew. An ideal developed team must share knowledge relating to flight operations, review individual responsibilities, share personal concerns, and have a clear understanding of expectations.

Upon flight origination or whenever a crew change occurs, the captain will conduct a verbal briefing, preferably with all the cabin crew. However, preflight duties, passenger boarding, rescheduling, etc. may make it impractical to brief the entire cabin crew complement. Regardless of time constraints, company policy is that the captain must brief the lead cabin crew. The briefing will be supplemented with a completed Cabin Crew Briefing Form. The briefing should cover the following items:

- Logbook discrepancies that may affect cabin crew responsibilities or passenger comfort (e.g., coffee maker inop, broken seat backs, manual pressurization, etc.)

- Weather affecting the flight (e.g., turbulence - including appropriate code levels, thunderstorms, weather near minimums, etc.). Provide the time when the weather may be encountered rather than a distance or location (e.g., “Code 4 Turbulence can be expected approximately one hour after takeoff.”)

- Delays, unusual operations, non-routine operations (e.g., maintenance delays, ATC delays, re-routes, etc.)

- Shorter than normal taxi time or flight time which may affect preflight announcements or cabin service.

- Any other items that may affect the flight operation or in-flight service such as catering, fuel stops, armed guards, etc.

- A review of the sterile flight deck policy, responsibility for PA announcements when the Fasten Seat Belt sign is turned on during cruise, emergency evacuation commands, or any other items appropriate to the flight.

During the briefing, the captain should solicit feedback for operational concerns (e.g., does each person understand the operation of the emergency exits and equipment). The captain should also solicit feedback for information which may affect expected team roles. Empower each crew member to take a leadership role in ensuring all crew members are made aware of any potential item that might affect the flight operation.

The lead cabin crew will inform the captain of any inoperative equipment and the number of cabin crew on board. The captain will inform the lead cabin crew when there are significant changes to the operation of the flight after the briefing has been conducted.

APPENDIX 5

CREW MONITORING AND CROSS-CHECKING

Background

Several studies of crew performance, incidents and accidents have identified inadequate flight crew monitoring and cross-checking as a problem for aviation safety. Therefore, to ensure the highest levels of safety each flight crew member must carefully monitor the aircraft's flight path and systems and actively cross-check the actions of other crew members. Effective monitoring and cross-checking can be the last barrier or line of defense against accidents because detecting an error or unsafe situation may break the chain of events leading to an accident. Conversely, when this layer of defense is absent, errors and unsafe situations may go undetected, leading to adverse safety consequences. It is difficult for humans to monitor for errors on a continuous basis when these errors rarely occur. Monitoring during high workload periods is important since these periods present situations in rapid flux and because high workload increases vulnerability to error. However, studies show that poor monitoring performance can be present during low workload periods, as well. Lapses in monitoring performance during lower workload periods are often associated with boredom and/or complacency.

Crew monitoring performance can be significantly improved by developing and implementing effective SOPs to support monitoring and cross-checking functions, by training crews on monitoring strategies, and by pilots following those SOPs and strategies. This Appendix focuses on the first of these components, developing and implementing SOPs to improve monitoring.

A fundamental concept of improving monitoring is realizing that many crew errors occur when one or more pilots are off-frequency or doing heads-down work, such as programming a Flight Management System (FMS). The example SOPs below are designed to optimize monitoring by ensuring that both pilots are “in the loop” and attentive during those flight phases where weaknesses in monitoring can have significant safety implications.

Review and Modification of Existing SOPs

Some SOPs may actually detract from healthy monitoring. Operators should review existing SOPs and modify those that can detract from monitoring. For example, one air operator required a PA announcement when climbing and descending through 10,000 feet. This requirement had the unintended effect of “splitting the cockpit” at a time when frequency changes and new altitude clearances were likely. When the air operator reviewed its procedures it realized that this procedure detracted from having both pilots “in the loop” at a critical point and consequently decided to eliminate it.

Another operator required a company radio call to operations once the aircraft had landed. A critical review of procedures showed that this requirement, although sometimes necessary, had resulted in runway incursions because the first officer was concentrating on making this radio call and not fully monitoring the captain's taxi progress. The procedure was modified so that crews make this call only when necessary and then only once all active runways are crossed, unless unusual circumstances warrant otherwise (such as extensive holding on the ground).

In addition to modifying existing SOPs, operators may consider adding sections to the SOP manual to ensure that monitoring is emphasized, such as:

- High-level SOPs that send an over-arching message that monitoring is a very important part of cockpit duties.

Examples:

A. The SOP document could explicitly state that monitoring is a primary responsibility of each crew member.

B. Monitoring Responsibility
   - The PF will monitor/control the aircraft, regardless of the level of automation employed.
   - The PNF will monitor the aircraft and actions of the PF.

Rationale:

A. Several air operators have made this change because they feel it is better to describe what that pilot should be doing (monitoring) rather than what he/she is not doing (not flying).

B. Although some SOP documents do define monitoring responsibilities for the PF, this role is often not explicitly defined for the PNF. In many cases non-monitoring duties, such as company-required paperwork, PA announcements, operating gear and flaps, are clearly spelled-out, but seldom are monitoring duties explicitly defined for each pilot.

SOPs to support monitoring during airport surface operations.

Examples:

A. Both pilots will have taxi charts available. A flight crew member, other than the pilot taxiing the aircraft, should follow the aircraft's progress on the airport diagram to ensure that the pilot taxiing the aircraft is following the instructions received from ATC.

B. Both pilots will monitor taxi clearance. Captain will verbalize to FO any hold short instructions. FO will request confirmation from Captain if not received.

C. When approaching an entrance to an active runway, both pilots will ensure compliance with hold short or crossing clearance before continuing with non-monitoring tasks (e.g., FMS programming, Airborne Communications Addressing and Reporting System (ACARS), company radio calls, etc.).

Rationale:

Pilot-caused runway incursions often involve misunderstanding, not hearing a clearance or spatial disorientation. These SOPs are designed to do several things.

A. The requirement for both pilots to have taxi charts out ensures that the pilot who is not actively taxiing the aircraft can truly back-up the pilot who is taxiing.

B. Requesting that both pilots monitor the taxi clearance and having the captain discuss any hold short instructions is a method to ensure that all pilots have the same understanding of the intended taxi plan.

C. The requirement to suspend non-monitoring tasks as the aircraft approaches an active runway allows both pilots to monitor and verify that the aircraft stops short of the specified holding point.

SOPs to support improved monitoring during vertical segments of flight (also refer to Appendix 3 of this document, “ATC Communications and Altitude Awareness”)

Examples:

A. PF should brief PNF when or where delayed climb/descent will begin.

B. Perform non-essential duties/activities during lowest workload periods such as cruise altitude or level flight.

C. When able, brief the anticipated approach prior to top-of-descent.

D. During the last 1,000 feet of altitude change both pilots should focus on the relevant flight instruments to ensure that the aircraft levels at the proper altitude. (When VMC one pilot should include scanning outside for traffic; however, at least one pilot should focus on ensuring that the aircraft levels at the proper altitude.)

Rationale:

A study on crew monitoring revealed that three-quarters of the monitoring errors in that study occurred while the aircraft was in a vertical phase of flight, i.e., climbing, descending or approach. These SOP statements ensure that proper attention can be devoted to monitoring during vertical phases of flight.

A. The monitoring study highlighted that a number of altitude deviations occurred when crews were given an altitude crossing restriction, but then failed to begin the descent in a timely manner. Briefing the anticipated top-of-descent point not only promotes healthy CRM, but also allows the other pilot to "back up" the planned descent point and ensure the descent begins at the proper point. Example: "We'll begin our descent at 80 DME."

B. Studies likewise show that in order to minimize the chance of a monitoring error, crews should schedule performance of non-essential duties/activities during the lowest workload periods, such as cruise altitude or level flight.

C. Briefing the anticipated instrument approach prior to descent from cruise altitude allows greater attention to be devoted to properly monitoring the descent because the crew is not having to divide attention between reviewing the approach and monitoring the descent. It also allows greater attention to be devoted to the contents of the approach briefing, which can increase situation awareness and understanding of the intended plan for approach and landing.

D. Many altitude deviations occur because pilots are not properly monitoring the level off.

This SOP statement is to ensure that pilots concentrate on ensuring the aircraft levels at the proper altitude, instead of being distracted by or performing non-monitoring tasks.

SOPs to support improved monitoring of automation

Examples:

A. Before flight, the routing listed on the flight release must be cross-checked against the ATC clearance and the FMS routing.

B. When making auto flight systems inputs, comply with the following items in the acronym **CAMI**:

Confirm FMS inputs with the other pilot when airborne.
Activate the input.
Monitor mode annunciation to ensure the auto flight system performs as desired.
Intervene if necessary.

C. During high workload periods FMS inputs will be made by the PNF, upon the request of PF. Examples of high workload include when flying below 10,000 feet and when within 1000 feet of level off or Transition Altitude.

D. Pilots should include scanning of the Flight Mode Annunciator as part of their normal instrument scan, especially when automation changes occur (e.g., course changes, altitude level off, etc.).

Rationale:

A. It is not unusual for the routing that is loaded in the FMS to be different from the routing assigned by ATC, especially in those cases where the flight plan is uplinked directly into the FMS, or when an FMS stored company route is used. Various studies have demonstrated that FMS programming errors made during preflight are not likely to be caught by flight crews during flight. Therefore it is critical that these items be cross-checked before takeoff.

B. The above-mentioned monitoring study found that 30 percent of the monitoring errors in that study's dataset occurred when a crew member was programming a Flight Management System (FMS). Another study showed that even experienced pilots of highly automated aircraft sometime fail to adequately check the Flight Mode Annunciator to verify automation mode status. The

acronym “CAMI” can be used to help emphasize cross-checking of automation inputs, monitoring and mode awareness.

C. The statement concerning FMS inputs during high workload allows the PF to concentrate on flying and monitoring by simply commanding FMS inputs during highly vulnerable times. Several reports indicate problems with failure to level-off and failure to reset altimeters to proper settings. Therefore, the definition of “high workload” should include those vulnerable phases.

D. Automated flight guidance systems can have mode reversions and can sometimes command actions that are not anticipated by pilots. Therefore, pilots should include the Flight Mode Annunciator into their normal instrument scan. Special attention should be given to periods of course changes, altitude level off, etc.)

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AIC

04/07

1 September

PASSENGER LOADING BRIDGE (AEROBRIDGE) CHARGES

Passenger loading bridge fees levied at Yangon International Airport shall be based on the aircraft seating capacity as follows:-

AIRCRAFT SEATING CAPACITY	AEROBRIDGE BASIC CHARGE PER FLIGHT
0 - 150 seats	USD 80.00 for the first 1½ hours or part thereof; and USD 80.00 for every subsequent 1½ hours or part thereof.
151 - 250 seats	USD 116.00 for the first 1½ hours or part thereof; and USD 116.00 for every subsequent 1½ hours or part thereof.
251 - 350 seats	USD 156.00 for the first 1½ hours or part thereof; and USD 156.00 for every subsequent 1½ hours or part thereof.
Exceeding 350 seats	USD 228.00 for the first 1½ hours or part thereof; and USD 228.00 for every subsequent 1½ hours or part thereof.

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AIC

05/07

1 September

GUIDANCE FOR AIR OPERATORS ON THE ESTABLISHMENT OF A FLIGHT SAFETY DEPARTMENT

1. PURPOSE

1.1 This Circular provides guidance for air carriers for the development of an effective safety department. Guidance is also provided on the functions, qualifications, and responsibilities of a Director of Safety.

2. BACKGROUND

2.1 Air operators should have a safety department that addresses the broad range of risks involved in commercial aviation, including flight operations, maintenance, and ground safety. Since operators vary in size and scope of operations, when determining the size and complexity of a safety department, it is appropriate to consider such criteria as the kind of operations involved, the number and type of airplanes used, and the areas of operations.

2.2 Any safety program should be designed to prevent personal injury and property losses. Thus the primary objectives of a safety program should be to motivate safe actions through the establishment of a positive corporate safety culture; identifying hazards to safe operations; working with other company departments to develop and implement safety interventions; monitoring intervention strategies to validate effectiveness; and communicating the results of safety efforts throughout the company.

2.3 The DCA encourages certificate holders to identify and correct instances of non-compliance with company procedures and DCA regulations, using internal safety audits as a tool for continuously monitoring and evaluating practices and procedures. The DCA believes that the implementation of a comprehensive and effective safety department will benefit both the certificate holder and the flying public.

2.4 To ensure an effective flight safety programme it is essential that each certificate holder has a focal point for safety activities, such as a Director of Safety (DOS) or Vice-president of Safety. This person would be responsible for keeping the certificate holder's senior management fully informed about the safety status of the certificate holder's entire operation. The DCA believes that an independent, full time safety position is important, for large operations. However, the DCA recognizes that in smaller operations, the Director of Safety function might be an additional function of a current manager.

3. DIRECTOR OF SAFETY (DOS)

3.1 Functions

3.1.1 To enable the Director of Safety to implement and manage the company flight safety programme, the post-holder must have access to all departments at all levels. The primary responsibility of the DOS is to ensure the highest level of safety in the company flight operations.

3.1.2 The Director of Safety is normally responsible to the Chief Executive Officer (CEO) for:-

a) Providing information and advice on flight safety matters to the CEO.
b) Ensuring that a Flight Safety Handbook / Manual is prepared which describes the airline's safety policy and procedures, and that all employees comply with the same.
c) Establishing a reporting system which provides for a timely and free flow of safety-related information.
d) Maintaining the air safety occurrence database
e) Monitoring corrective actions and flight safety trends
f) Coordinating the DCA's Mandatory Occurrence Reporting requirements.
g) Soliciting and processing safety improvement suggestions
h) Developing and maintaining a safety awareness programme
i) Liaising with the heads of all departments company-wide on flight safety matters
j) Acting as Chairman of the Company Flight Safety Committee.

k) Disseminating flight safety-related information company-wide
l) Liaising with manufacturers' flight safety departments, government regulatory bodies and other flight safety organisations world-wide
m) Assisting with the investigation of accidents and incidents
n) Carrying out safety audits and inspections
o) Maintaining familiarity with all aspects of the Company's activities and its personnel
p) Reviewing and updating of the company emergency response plan
q) Planning and controlling the Flight Safety budget
r) Managing or having oversight of the FDA Programme
s) Publishing the Company flight safety magazine
t) Participation in corporate strategic planning

3.1.3 The Director of Safety position in large airline should be established as a full time position. In small airlines (less than 5 aircraft) it may not be necessary to establish a full time Director of Safety position. These operators are, however, encouraged to designate a company manager to monitor and evaluate flight operations, maintenance, and ground safety practices, procedures, and programs.

3.2 **Qualifications**

3.2.1 The suggested minimum attributes and qualifications required for a DOS are:-

a) A broad aviation/technical education
b) A sound knowledge of commercial operations, in particular flight operations procedures and activities
c) Experience as a flight crew member or engineer
d) The ability for clear expression in writing
e) Good presentation and interpersonal skills
f) Computer literacy
g) The ability to communicate at all levels, both inside and outside the Company
h) Organisational ability
i) To be capable of working alone (at times under pressure)
j) Good analytical skills
k) To exhibit leadership
l) Be worthy of commanding respect among peers and management officials

3.2.2 Training

a) The DOS would be expected to become familiar with all operational aspects of the organisation, its activities and personnel. This will be achieved in part by in-house induction training. However, such knowledge is best acquired by self-education and research.

b) External training should at least cover the management of a flight safety programme and basic accident investigation and crisis management.

4. APPLICABILITY

Air Operators should review their Flight Safety Departments to ensure that:

4.1.1 The established safety department is appropriate to the size and scope of operations and that it addresses the broad range of risks involved in commercial aviation, including but not limited to, flight operations, maintenance and ground safety.

4.1.2 That air operator manual(s) include the duties, responsibilities, and authority of the Director of Safety.

4.1.3 The qualifications of an individual serving as a full time Director of Safety are similar to those outlined above.

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AIC

06/07

1 September

GUIDANCE TO OPERATORS ON CONDUCTING CONSTANT DESCENT FINAL APPROACH (CDFA) FOR NON-PRECISION APPROACHES

1. PURPOSE

1.1 Traditional step-down approaches are based on an obstacle-clearance profile and such approaches are not optimum for modem turbine aircraft and turboprop aircraft. Flying a constant-angle approach profile provides a more stabilized flight path, reduces workload, and reduces the risk of error.

1.2 The ICAO Procedures for Air Navigation Services - Aircraft Operations (PANS-OPS), prescribes a stabilized approach in that the aircraft must be in a stabilized position at a certain altitude. For an optimum approach technique, the stabilization should not only exist at a certain position, but should be a continuous state, established as early as possible after joining the final approach track. An optimum landing manoeuvre requires the aircraft to reach the decision altitude or point in a stabilised state, in order to allow sufficient time for the pilot to assess the visual cues for the decision to land or to go around. The aircraft's attitude and position relative to the runway should be similar in each approach, to the greatest extent possible, in order to permit the pilot to utilize Standard Operating Procedures (SOP) which are similar for all types of instrument approaches.

1.3 Advantages of CDFA

1.3.1 Compared to the steep descent approach technique where the aircraft descends step by step prior to the next minimum altitude, a Constant Decent Final Approach technique has the following advantages:-

1) The technique enhances safe approach operations by the utilization of simplified standard operating practises;

2) Approach technique reduces pilot workload and enhances situational awareness;

3) Approach profile affords greater obstacle clearance along the final approach course;

4) Approach technique is similar to ILS techniques, including the missed approach and the associated go-around manoeuvre;

5) Approach technique affords procedural integration with VNAV approaches;

6) Aircraft attitude when on the required constant angle descent path facilitates acquisition of visual cues;

7) The constant angle descent profile flown in a stabilized manner is the safest approach technique for all type of approach operations;

8) Approach profile is fuel efficient; and

9) Approach profile affords reduced noise levels.

1.4 This AIC contains information to encourage air operators to develop Standard Operating Procedures and train pilots to fly a constant descent final approach (CDFA) when flying a published non-precision approach procedure.

1.5. This AIC provides information that air operators may utilize to develop constant descent final approaches (CDFA) when flying non-precision approach procedures for all aircraft types.

1.6. Modern aircraft may utilize aircraft navigation systems to achieve CDFA non-precision approach procedures utilizing VNAV and other navigation system capabilities.

2. RELATED CIVIL AVIATION REGULATIONS

a) The Union of Myanmar Aircraft Act (1934)
b) The Union of Myanmar Aircraft Rules (1937)

3. BACKGROUND

3.1 Analysis of accident data indicates that the accident rate is five times greater during non-precision approaches than when aircraft are conducting precision approaches. In the interest of safety, air operators should discontinue the use of step-down or "dive-and-drive" non-precision approach procedures as soon as, and wherever possible. Air operators who have yet to do so should, at the earliest possible date, develop procedures and train pilots to fly constant descent final approaches (CDFA) when flying non-precision approach procedures. All types of aircraft can fly procedures utilizing a constant rate descent, even those with just basic navigation capabilities.

3.2 Instrument approach procedures are normally identified by the name of the city or town or area which the aerodrome serves, the name of the aerodrome, the abbreviation of the type of radio navigation aid(s) on which the instrument approach procedure or the visual manoeuvring (circling) procedure is established and the designator of the runway where applicable.

3.3 When an instrument approach procedure is designed for RNAV, the additional abbreviation "RNAV" is given. If the procedure is restricted to specific sensors, these are indicated in subscript and parenthesis "$RNAV_{(DME/\ DME)}$".

3.4 For a VOR/DME RNAV procedure, the additional abbreviation "RNAV" or "$RNAV_{(VOR/DME)}$" is followed by the identification of the reference VOR/DME, and when the instrument approach procedure is designed for RNP, the abbreviation "RNP" shall be applied, and the RNP value shall be published in subscript and parenthesis, e.g. "$RNP_{(0.3)}$".

3.5 When operationally required, separate charts shall be published for each sensor, or for a combination of navigation sensors. Separate charts shall only be published if the routes differ laterally or vertically.

3.6 Therefore, regardless of the additional on board navigation capability an aircraft may have, the navigation aid(s) on which the instrument approach procedure is based are always to be used as primary navigation aid to conduct all instrument approaches. However, the additional aircraft navigation capability can be used to supplement the information provided by the primary aids.

3.7 The International Civil Aviation Organization has amended Procedures for Air Navigation Services - Aircraft Operations (PANS-OPS), Volume I, Part III, Chapter 3, paragraph 3.5.4. The revision states that compatible with the primary safety consideration of obstacle clearance non-precision approach design shall provide the optimum final approach descent gradient of 5.0 per cent, or constant approach slope of 3 degrees. Information provided in approach charts shall display the optimum constant approach slope.

3.8 In addition the revision requires air operators to include in their standard operating procedures specific guidance to utilize on-board technology, combined with ground-based aids such as distance measuring equipment (DME), to facilitate the execution of optimum constant approach slope descents during non-precision approaches.

4. CDFA PROCEDURES

4.1 Definition of non-precision approach

4.1.1 Non-precision approach and landing operations: An instrument approach and landing which utilizes lateral guidance but does not utilize vertical guidance.

4.2 Derived Decision Altitude (Height) (DDA(H)) Concept

4.2.1 In order to support timely implementation of CDFA approaches and reduce the risk of CFIT, this AIC also introduces a new definition of the term DDA(H). Flight Check section may apply the information in this AIC to aid operators in approving those expanded VNAV operations.

4.2.2 Air operators need to determine a DDA(H) for each CDFA approach they intend to fly. DDA(H) must be established by adding a safety margin to the published OCA(H) or the published MDA whichever is higher. The safety margin should be sufficient to ensure that the aircraft will not descend below the published MDA(H) when a decision to execute a missed approach is made at the DDA(H).

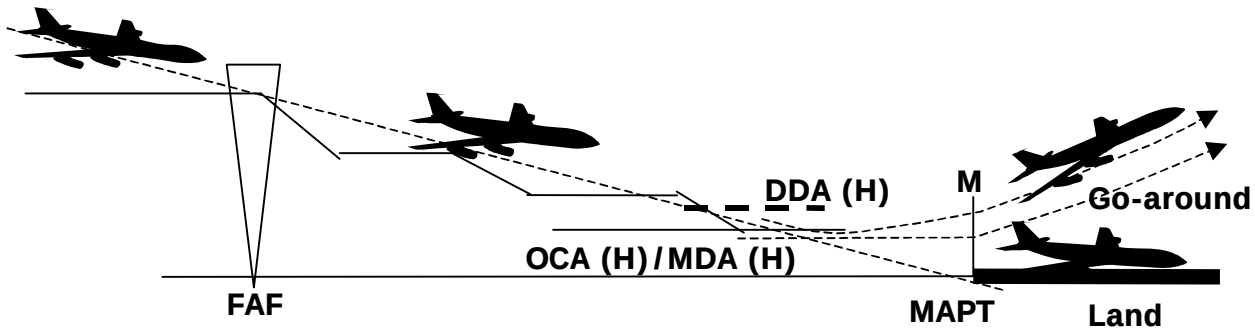
4.2.3 Air operators may need to establish aircraft type specific safety margins for each aircraft type operated and establish type specific DDA(H) for each approach.

4.2.4 The Derived Decision Altitude (Height) is a point located on the centreline of the approach track and of the stabilized descent profile at an altitude defined by the operator.

4.2.5 CDFA would allow the aircraft to be flown on the published descent path from the final approach fix (FAF) to the DDA. The DDA is a point from which a stabilized approach can be continued visually to a landing; or, if still in instrument meteorological conditions (IMC), a point from which a missed approach can be initiated and conducted with the assurance that the aircraft will not descend below the MDA(H) or below the State published OCA(H), whichever is higher.

4.2.6 Flight crews need to confirm that the descent path will remain at or above all step-down fixes published on the approach chart. An example of a typical CDFA profile is depicted in the figure below.

Typical CDFA descent profile



4.3 Flight technique

4.3.1 The continuous descent approach technique can be flown on almost any published non-precision approach when the control of the descent path is aided by either:

- a recommended descent rate based on estimated ground speed is provided on the approach chart; or
- the descent path is depicted on the chart.

4.3.2 In order to facilitate the requirement above, the operator should either provide charts that depict the appropriate cross check altitudes/heights with the corresponding appropriate range information, or such information should be calculated and provided to the flight-crew in an appropriate and useable format.

4.3.3 To achieve a continuous descent flight path on an approach procedure where step-down fixes are specified, descent may be delayed until after passing the FAF, or the FAF crossed at an increased altitude height. If a greater height is used, ATC clearance should be obtained to assure separation.

4.3.4 For approaches flown coupled to a designated descent path using computed electronic glide-slope guidance, (nominal 3 degree path) the descent path should be appropriately coded in the flight management system data base and the specified navigational accuracy should be determined and maintained throughout the operation of the approach.

4.3.5 With an actual or estimated ground speed and a designated decent profile/path and required descent rate the approach is flown by crossing the FAF configured and on-speed. The tabulated or required descent rate is established and flown to the DDA(H) where the decision to land or go-around must be made, observing any step-down crossing altitudes if applicable. The aeroplane should be configured and on-speed as early as practicable, but preferably not later than the FAF.

4.3.6 To assure the appropriate descent path is flown the pilot not flying should announce crossing altitudes as published fixes and other designated points are crossed, giving the appropriate altitude or height for the appropriate range as depicted on the chart. The pilot flying should promptly adjust the rate of descent as appropriate.

4.3.7 An option to ensure that the go-around manoeuvre is initiated not later than the DDA (H), is to annunciate by the pilot not flying at an altitude of 100 ft above the DA/MDA, that the minima are approached.

4.3.8 With the required visual reference requirements established, the aircraft should be in position to continue descent through the DDA(H) and below the MDA(H) with little or no adjustment to attitude or thrust/ power.

4.3.9 When the visual reference requirements are not established at the DDA(H) the missed-approach procedure is executed without delay. Prompt go-around action is necessary if the required visual reference is not obtained on reaching the DDA(H) in order that the aircraft does not descend below MDA.

4.3.10 The manoeuvre associated with the vertical profile of the missed approach should be initiated not later than reaching the DDA(H) specified by the operator for the approach. Any turning manoeuvre associated with the missed approach should not be initiated before reaching the MAPt.

4.3.11 The Missed Approach Point (MAPt) may be located prior to the runway threshold. If the aircraft is above the optimum flight path the missed approach point could be reached prior to the DDA(H). An immediate climb must be initiated in such a case.

Descending Below MDA(H)

4.3.12 During a non-precision approach, the pilot flying (PF) is either hand-flying the aircraft or supervising Auto Pilot (AP) operation; the pilot not flying (PNF) is responsible for acquiring and calling out the visual references. Continuing the approach below the MDA(H) is permitted only if the required visual references has been acquired by the PF.

4.3.13 If adequate visual references are not acquired when reaching DDA:

- Initiate a go-around climb; and,

- Continue on the approach track until over the MAPt (to guarantee obstacle clearance during the go-around) and fly the published missed approach procedure. No turn should be initiated before reaching the missed approach point and, if a minimum altitude is indicated on the approach chart, until the indicated altitude has been reached.

4.3.14 **ICAO states that although the flight crew should over fly the MAPt before conducting the published missed approach procedure, this does not preclude flying over the MAPt at an altitude/height greater than that published in the procedure.**

Training

4.3.15 The operator should ensure that prior to conducting CDFA each flight crew member undertakes:

a) The appropriate training and checking to include training on the techniques and procedures appropriate to the operation to be conducted that are stipulated in paragraph above;

b) When approved to operate CDFA the operator proficiency check should include at least one CDFA to a landing or go around as appropriate. The approach should be operated to the lowest appropriate DDA(H); and if conducted in a Simulator the approach should be operated to the lowest approved RVR/ Visibility;

c) The policy for the establishment of continuous descent paths and approach stability are to be enforced both during initial and recurrent pilot training and checking. The relevant training procedures and SOPs should be documented in the Operations Manual; and

d) The training should emphasize the need to establish and facilitate joint crew procedures and CRM to enable accurate descent path control and the requirement to establish the aeroplane in a stable condition as required by the operator operational procedures.

4.3.16 Emphasis during training should be placed on the flight crews:

a) Need to maintain situational awareness at all times, in particular with reference to the vertical and horizontal profile;

b) Need to maintain good communication channels throughout the approach; and

c) Ability to maintain accurate descent path control particularly during any manually flown descent phase. The non operating / non-handling / monitoring pilot should facilitate good flight path control by:

- Monitoring of flight path during the whole approach including flight below DDA(H) to the landing;

- Communicating any altitude/height crosschecks prior to the actual passing of the range/altitude or height crosscheck;

- Prompting as appropriate changes to the target rate of descent.

4.3.17 Actions to be taken at the DDA(H):

a) Need to ensure that the decision to go around must at the latest have been taken upon reaching the DDA(H) in order to avoid a temporary descent below the published MDA(H), specifically in case of an very early missed approach point (application of an "approaching minima" call);

b) Understanding of the need for prompt go around action when at DDA(H) if the required visual reference has not been obtained;

c) Understanding and significance of a CDFA flown to a DDA(H) with an associated MAPt;

d) Understanding of the implications of early go around manoeuvres when undertaking CDFA to a DDA(H) with an associated MAPt; and

e) Understanding of the possible loss of the required visual reference when not conducting a CDFA for aeroplane types/class that require a late change of configuration and or speed to ensure the aeroplane is in the appropriate landing configuration.

6. APPLICABILITY

6.1 While operators can develop additional standard operating procedures for aircraft with more advanced navigation systems, they can also establish similar CDFA procedures utilizing a DDA(H), for all aircraft types. This AIC does not list every important SOP topic or dictate exactly how CDFA procedures should be developed. It provides guidance on some of the considerations for implementation of CDFA which air operators may adapt for their particular aircraft and operation.

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AIC

07/07
10 September

GUIDANCE TO AIR OPERATORS IN ESTABLISHING A FLIGHT SAFETY DOCUMENTS SYSTEM

1. PURPOSE

1.1 This AIC is issued to provide air operators with guidance on the establishment of an effective flight safety documents system for the use and guidance of operational personnel.

2. RELATED CIVIL AVIATION REGULATIONS

a) The Union of Myanmar Aircraft Act (1934)
b) The Union of Myanmar Aircraft Rules (1937)

3. BACKGROUND

3.1 The findings of the ICAO Universal Safety Oversight Audit Programme (USOAP) include, among others, deficiencies in compliance with Standards and Recommended Practices (SARPs) regarding operational documents required by Annex 6. These specific findings refer to deficiencies in operations manuals and maintenance control manuals.

3.2 Analysis of accident information revealed that in three accident reports involving international commercial air transport aircraft and in 1061 incident reports, deficiencies in operational documents were considered contributing factor to the events.

3.3 The International Civil Aviation Organization has adopted a new Standard in Annex 6, Operations of Aircraft, Part I, requiring that an operator establish a flight safety documents system for the use and guidance of operational personnel as part of its accident prevention and flight safety programme.

4. SCOPE

4.1 The scope of this AIC is to provide guidance on the development and organization of a flight safety documents system.

4.2 That air operator manual(s) include the duties, responsibilities, and authority of the Director of Safety.

4.3 The qualifications of an individual serving as a full time Director of Safety are similar to those outlined above.

5. FLIGHT SAFETY DOCUMENTS SYSTEM

5.1 It should be understood that the development of a flight safety documents system is a complete process, and that changes to each document comprising the system may affect the entire system. Guidelines applicable to the development of operational documents have been produced by DCA and are available to air operators. Nevertheless, it may be difficult for operators to make the best use of these guidelines, since they are distributed across a number of publications.

5.2 Furthermore, guidelines applicable to operational documents development tends to focus on a single aspect of documents design, for example, formatting and typography. Guidelines rarely cover the entire process of operational documents development.

5.3 It is important for operational documents to be consistent with each other, and consistent with regulations, manufacturer requirements and Human Factors principles. It is also necessary to ensure consistency across departments as well as consistency in application. Hence the emphasis should be placed on an integrated approach, based on the notion of the operational documents as a complete system.

5.4 The guidelines in this AIC address the major aspects of an operator's flight safety documents system development process, with the aim of ensuring compliance with CAR XXX (insert regulation number). The guidelines are based not only upon scientific research, but also upon current best industry practices, with an emphasis on a high degree of operational relevance.

6. ORGANIZATION

6.1 A flight safety documents system should be organized according to criteria which ensure easy access to information required for flight and ground operations contained in the various operational documents comprising the system and which facilitate management of the distribution and revision of operational documents.

6.2 Information contained in a flight safety documents system should be grouped according to the importance and use of the information, as follows:

1) Time critical information, e.g., information that can jeopardize the safety of the operation if not immediately available;

2) Time sensitive information, e.g., information that can affect the level of safety or delay the operation if not available in a short time period;

3) Frequently used information;

4) Reference information, e.g., information that is required for the operation but does not fall under 1) or 2) above; and

5) Information that can be grouped based on the phase of operation in which it is used.

6.3 Time critical information should be placed early and prominently in the flight safety documents system.

6.4 Time critical information, time sensitive information, and frequently used information should be placed in cards and quick-reference guides.

6.5 The flight safety documents system should be validated before deployment, under realistic conditions. Validation should involve the critical aspects of the information use, in order to verify its effectiveness. Interactions among all groups that can occur during operations should also be included in the validation process.

6.6 A flight safety documents system should maintain consistency in terminology and in the use of standard terms for common items and actions.

6.7 Operational documents should include a glossary of terms, acronyms and their standard definition, updated on a regular basis to ensure access to the most recent terminology. All significant terms, acronyms and abbreviations included in the flight documents system should be defined.

6.8 A flight safety documents system should ensure standardization across document types, including writing style, terminology, use of graphics and symbols, and formatting across documents. This includes a consistent location of specific types of information, consistent use of units of measurement and consistent use of codes.

6.9 A flight safety documents system needs to include a verification mechanism to ensure that, whenever a section of a document is amended, all other documents likely to be affected are identified and that consequential amendments are duly coordinated and agreed to by the responsible departments before the amendment is processed.

7. APPLICABILITY

7.1 Air operators who have yet to establish a flight safety documents system should utilize the information contained in this AIC in establishing such a system. Air operators who have established such a system should verify that the functionality of their system is in compliance with the concepts outlined in this AIC. DCA inspectors will be conducting a review of the flight safety documents system to ensure that it is effective in providing vital safety information to flight crew in a timely manner.

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AIC

10/07

11 December

SECURITY MEASURES ON THE CARRIAGE OF LIQUIDS, AEROSOLS AND GELS (LAGs) FOR PASSENGERS DEPARTING MYANMAR

1. PURPOSE

1.1 To increase the safety and security of passengers departing from Myanmar, the Department of Civil Aviation will introduce additional security measures on 1st January 2008, in order to limit the amount of LAGs each passenger is permitted to carry onboard aircraft.

2. SECURITY MEASURES FOR THE CONTROL OF LIQUIDS, AEROSOLS AND GELS

2.1 All liquids, Aerosols and Gels (LAGs) should be handled in accordance with ICAO recommendations contained in State Letter AS 8/11-06/100 dated December 2006, AS 8/11-07/26 of 30 March 2007 and AS 8/12-07/53 of 6 July 2007.

2.1.1 All LAGs should be carried in containers with a capacity not greater than 100 ml each (if the container is marked in grams, it is assumed that 100 g corresponds to 100 ml);

2.1.2 Any LAGs carried in a container larger than 100 ml are not accepted, even if the container is only part-filled;

2.1.3 Containers with LAGs should be placed in a transparent re-sealable plastic bag of a maximum capacity not exceeding 1litre. The containers must fit comfortably within the transparent plastic bag, which should be completely closed;

2.1.4 Each passengers is permitted to carry only one such bag which is to be presented separately for screening;

2.1.5 All conventional security controls and checks, including random hand searches of passengers and cabin bags, will still apply;

2.1.6 Flight crew in uniform and duty day(s) of the journey are exempted from this restriction.

2.2 The following items over 100 ml are not permitted in carryon baggage:-

a) Water and other drinks, soups, syrups, jams, stews, sauces, and pastes;
b) Foods in sauces or containing a high liquid content;
c) Creams, lotions, cosmetics and oils;
d) Perfumes;
e) Sprays;
f) Gels including hair and shower gels;
g) Contents of pressurized containers, including shaving foam, other foam and deodorants;
h) Pastes including toothpaste;
i) Liquid solid mixtures;
j) Mascara;
k) Lipsticks;
l) Lip gloss or lip balm; and
m) Any item of similar consistency at room temperature.

2.3 This is not an exhaustive list and security screening staff and airline representative have the authority to determine what constitutes a liquid, aerosol and gels. If passengers are unsure of whether an item will be rejected for carriage the item should be packed in hold stowed baggage.

3. EXEMPTIONS FOR MEDICATIONS AND SPECIAL DIETARY REQUIREMENTS, INCLUDING BABY FOODS

3.1 Exemptions for medicines

3.1.1 Subject to certain conditions prescription medicine, medications are exempted from these security measures. Passengers should determine the reasonable quantity of non-prescription medication required for the duration of the flight, as the need to carry the medication will also be assessed by security screening staff and airline representatives. Reasonable amounts include what is required for the total length of the flight(s) as well as possible delays and flight diversions.

3.1.2 Medicines may include the following:-

a) Essential prescribed medicines, including angina spray;
b) Insulin;
c) Clotting factor (for haemophiliacs);
d) Contact lens solution, where the container capacity exceeds 100ml;
e) Inhaler (with spare canisters to be packed in checked baggage);
f) Essential non-prescribed medicines such as cough syrup; and
g) Children medicines.

3.1.3 Other disability and medical items, such as blood products, organs, human embryo, get filled external breast prosthesis and supplemental oxygen are also exempted. The passenger could be invited to sample the items or rub them on their skin to prove they are safe. It is recommended that passengers carry supporting documentation ID cards, letters from doctor etc.) regarding their medication needs.

3.2 Exemptions for dietary needs

3.2.1 Liquids as a special dietary needs are permitted to be carried where it is determined the food is essential for the passenger's health for the duration of the flight. Such food could include special diets for lactose- intolerant passengers or gluten- intolerant passengers. When request to do so, the passenger should provide proof of authenticity.

3.3 Exemptions for baby and child products

3.3.1 Baby and child products in reasonable amounts required for the flight are exempt from these security measures. Where the volume of baby products is deemed excessive by security screening staff, it will not be permitted beyond the screening point.

3.3.2 Passengers carrying baby and child products must have them readied for inspection. It is also reasonable for screening staff or airline representative to request that passengers identify the baby or child requiring the products and if necessary the accompanying adult will be asked to verify the product by taste.

3.3.3 Baby and child products may include:

a) Baby milk;
b) Sterilized water;
c) Baby juice;
d) Baby food in liquid, gel or paste form; and
e) Wet wipes.

3.4 Airport staff

3.4.1 The personal items of airport staff entering a security restricted area and onboard an aircraft (i.e. beverages, perfumes, cosmetics, medications and similar items) should be subjected to the same restrictions and exemptions as passengers.

3.4.2 However, tools of the trade are exempt from LAGs restrictions. Tools of the trade are defined as articles in a person's possession which are required for the lawful purpose for which he or she is in the sterile area.

3.4.3 Tools of the trade may include:-

a) cleaning products;
b) sealants;
c) degreasers;
d) glues;
e) paints; and
f) Oils.

3.5 **Exempt persons**

3.5.1 The law enforcement officers and emergency personal responding to a crisis are exempted from LAGs restrictions.

4. SECURITY TAMPER-EVIDENT BAGS (STEBs)

4.1 LAGs, any volume, purchased at airport retail outlets or on board aircraft during the day(s) of the journey should not be allowed through security screening points unless they are carried in a Security Tamper-Evident Bag (STEBs).

5. TECHNICAL SPECIFICATIONS FOR STEBs

5.1 Materials to be used: transparent, high impact low density polyethylene or equivalent; recyclable and environment-friendly product if possible; and size and thickness minimum of 50 microns) to be adjusted to the needs.

5.2 **On the top face of STEBs**

5.2.1 **Closure** - red tamper evident tape (minimum 30mm tape with 40 mm release liner); high tack pressure sensitive self adhesive; and integral security device/hidden graphic to show if tampered with.

5.2.2 **Border** - side and bottom weld be no less than 15m width in red; and printed border of minimum 5mm with "DO NOT OPEN", airport name, or any other continuous message or design which may bleed over the edge of the bag.

5.2.3 **Message** - Security sign in green in the middle of the security box; and box in red at bottom stating "DO NOT OPEN UNTIL FINAL DESTINATION- CONTENTS MAY BE CONFISCATED IF BAG IS TEMPERED WITH".

5.2.4 Confirmation (identification features- receipt space inside the bag visible in the top left of the security box; the receipt should contain the date of the purchase, place of purchase (State, airport, airline) using international codes, flight number(s) and name of passenger, number and list of items purchased and placed in the STEB.

5.2.5 Origin of the bag- State three letter code or airline international code to determine the origin of the STEB, manufacturer name, inventory code and security code or device to protect STEB at retailer and shops.

5.2.6 On the back face of the bag: - individual airport / retailers / other branding or logos.

6. SECURITY PRINCIPLES APPLICABLE TO STEBS

6.1 Security tamper- evident bags are to be manufactured in accordance with the technical specifications. The airport retailers and airlines should obtain assurance from STEB manufacturers on the quality of the STEBs, and implementation of reasonable security measures to prevent unauthorized access to, or interference with, the production, packing, storage and delivery of the STEBs to customer airports, airport retailers and airlines.

6.2 Security procedures -should be implemented to ensure that STEBs are not subject to conditions for misuse, abuse or any other circumstances that could lead to an act of unlawful interference.

7. KNOWN SUPPLIER OF LAGS AND STEBS

7.1 The known supplier of LAGs and/ or the known supplier of STEBs fully accept responsibility, by written declaration, for the implementation and quality control of LAGs and STEBs within the supply chain on the airside. This declaration may include the following:-

a) a person responsible for security in the company is appointed;
b) all persons with access to supplies have received proper security awareness training before being given access providing an equal level of security; and
c) Appropriate checks are conducted on supply chain security on airside.

8. VALIDATION PROCESS

8.1 Concerning LAGs in STEBs carried by passengers transiting/ transferring through several airports, Myanmar wish to seek confirmation from the State(s) where the passengers purchased the LAGs and States through which the passengers have transited or transferred that they have equally robust controls to their LAGs and STEBs.

8.2 The Department of Civil Aviation reserves the right to validate application of security screening procedures and measures for LAGs including inspection of LAGs storage facilities, integrity of the tamper- evident bags, and security arrangements for the transfer of the items to the aircraft and sales procedures.

9. SECURITY SCREENING PROCEDURES

9.1 Security screening procedures and the application of screening measures for LAGs are applied in accordance with procedures determined by the ICAO. Passengers refusing to be screened in accordance with these procedures will be referred to the airline concerned and denied carriage on flights departing Myanmar.

9.2 Security Screening staff or an airline representative has the authority to determine what items are permitted through the security screening point and ultimately carried on board an aircraft.

9.3 Further more if the security screening officer and airline representative determine that a passenger is attempting to carry unreasonable amounts of liquids, aerosols or gel, non-prescription medication, special dietary needs or baby products through the screening point, the carriage of those items may be refused.

10. CONCLUSION

10.1 AIP Myanmar GEN 1.3/1.4 refers.

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AIC
01/09
1 January 2009

REQUIREMENTS FOR GRANT OF A PERMIT TO A FOREIGN AIRLINE FOR COMMENCEMENT OF SCHEDULED INTERNATIONAL AIR SERVICES

1. INTRODUCTION

1.1 The requirements for grant of a permit to a foreign airline for commencement of scheduled international air services under bilateral or multilateral air services agreements are given for the information, guidance and compliance by the operators and is supplementary to AIP Myanmar, Section Gen. 1.2 paragraph 2.

2. DESIGNATION OF AIRLINE

2.1 The airline shall have been formally designated in accordance with the provisions of the relevant air services agreement between the Government of the Union of Myanmar and the Government of the State of the Operator.

3. APPLICATION

3.1 The airline shall submit an application letter to the Director General, the Department of Civil Aviation, for grant of a permit to operate. The application shall be signed by the legal representative of the headquarters of the airline and shall include details of the route planned to be operated, proposed commencing date, flight number, weekly frequency and days of operation, and the type(s) of aircraft to be used in the operation. The application shall be addressed to:

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E-mail: dgdca@dca.gov.mm

4. DOCUMENTS TO BE SUBMITTED

4.1 The following documents and information shall be submitted together with the application letter:-

a) a copy of the letter designating the airline in accordance with the provision of the relevant air services agreement;

b) the postal address, telephone and fax numbers as well as telex and e-mail addresses of the airline's head office;

c) a copy of the instrument relating to incorporation of the airline and detailed certified information regarding the principle places of business of the enterprise, nature of the enterprise, equity structure, nationalities of the investors, names and nationalities of the board of directors;

d) the company profile of the airline including the route network;

e) a copy of a valid air operator certificate or equivalent document issued by the State of the Operator;

f) a copy of the air transport licence or equivalent document (if different from above) authorizing the airline to operate scheduled international air services issued by the State of Operator;

g) copies of valid insurance policies and/or certificates substantiating the passenger, baggage, cargo and general third party liability insurance coverage of the airline;

h) a copy of the airline's Operations Manual;

i) a copy of the airline's security programme;

j) details of fleet of aircraft to be utilized in the operation of the agreed services together with their registration certificates indicating whether owned or leased by the airline.

k) In case of use of leased aircraft, a copy of the relevant lease agreement(s);

l) the title and the postal address, telephone and fax numbers as well as telex and e-mail addresses of the airworthiness, licensing and accident investigation authorities in respect of the airline; and

m) a delegation of authority by legal representative of the airline to the airline's local representative(s) who will be authorized to act on behalf of the airline in matters (which shall be stated in the terms of authorization) concerning the Department of Civil Aviation of Myanmar.

5. The application, together with the documents specified above, shall be submitted at least 60 days prior to the proposed date of commencement of the air services unless otherwise provided for in the relevant air services agreement or agreed between the aeronautical authorities of Myanmar and the State of Operator.

6. On fulfilment of the conditions prescribed under the relevant agreement and submission of all the aforesaid documents, the airline may be issued with an operating permit. The operations by the airline, however, will be subject to completion of other requirements specified in paragraphs 7 to 10 of this AIC.

7. The Department of Civil Aviation reserves the right to seek at any time information in respect of particulars mentioned in sub-paragraph 3.1 above and any other relevant information so as to satisfy itself that the airline continues to meet all the requirements on the fulfilment of which the permit to operate was granted.

8. SLOT COORDINATION

8.1 The airline shall coordinate allocation of slots with the General Manager, Yangon International Airport or the General Manager, Mandalay International Airport as applicable.

9. TARIFFS

9.1 The airline shall, in accordance with the provisions of the relevant agreement, obtain the approval of the competent authorities for the tariffs to be charged on the agreed services operated on the specified route(s).

10. APPROVAL OF ARRANGEMENTS DONE AT AIRLINES LEVEL

10.1 Subject to and in accordance with the relevant agreement, approval of the competent authorities in respect of arrangements done at airline's level shall be submitted by the airline to the Department of Civil Aviation.

11. FILING OF SCHEDULE

11.1 The airline shall file its proposed flight schedule with the Department of Civil Aviation for approval, at least 30 days prior to the commencement of the agreed services. The flight schedule should at least contain information relating to the type of service and its frequency, the type of aircraft to be used and the flight timings. The flights shall be operated only after the schedule has been approved by the Department of Civil Aviation.

12. AIC 02/03 dated 1 July 2003 is hereby superseded.

Director General
Department of Civil Aviation

Aerodrome Reference Points

Aerodrome		Everest								Transformed WGS-84								DGPS WGS-84							
		Latitude				Longitude				Latitude				Longitude				Latitude				Longitude			
Anisakan	VYAS	22	03	00	N	096	31	00	E	22	03	03.4	N	096	30	46.9	E	21	57	21.48	N	096	24	22.85	E
Ann	VYAN	19	46	00	N	094	02	15	E	19	46	03.8	N	094	02	03.1	E	19	46	09.37	N	094	01	34.41	E
Bagan	VYBG	21	10	49	N	094	55	56	E	21	10	52.5	N	094	55	43.6	E	21	10	44.28	N	094	55	49.27	E
Banmaw	VYBM	24	16	00	N	097	15	00	E	24	16	02.8	N	097	14	46.3	E	24	16	14.99	N	097	14	50.20	E
Bokpyinn	VYBP	11	16	00	N	098	46	00	E	11	16	06.1	N	098	45	46.7	E	11	08	57.56	N	098	44	10.37	E
Dawei	VYDW	14	06	00	N	098	12	26	E	14	06	05.5	N	098	12	12.7	E	14	05	50.55	N	098	12	24.18	E
Heho	VYHH	20	44	32	N	096	47	48	E	20	44	35.7	N	096	47	34.9	E	20	44	49.36	N	096	47	31.28	E
Hommalinn	VYHL	24	52	00	N	094	54	00	E	24	52	02.4	N	094	53	47.3	E	24	53	55.88	N	094	54	51.29	E
Hpa-an	VYPA	16	53	35	N	097	40	41	E	16	53	39.8	N	097	40	27.8	E	16	48	43.57	N	094	46	25.90	E
Kalay	VYKL	23	11	15	N	094	03	30	E	23	11	17.9	N	094	03	17.8	E	23	11	19.79	N	094	03	03.17	E
Kanti	VYKI	25	59	15	N	095	40	43	E	25	59	17.2	N	095	40	29.8	E	25	59	19.49	N	095	40	28.88	E
Kawthoung	VYKT	10	03	00	N	098	33	00	E	10	03	06.4	N	098	32	46.8	E	10	02	58.55	N	098	32	17.25	E
Kengtung	VYKG	21	18	08	N	099	38	09	E	21	18	11.8	N	099	37	54.6	E	21	18	05.94	N	099	38	08.75	E
Kyaukpyu	VYKP	19	25	28	N	093	32	20	E	19	25	31.9	N	093	32	08.3	E	19	25	35.57	N	093	32	04.86	E
Lashio	VYLS	22	58	42	N	097	45	27	E	22	58	45.2	N	097	45	13.3	E	22	58	39.49	N	097	45	08.68	E
Loikaw	VYLK	19	41	32	N	097	13	10	E	19	41	36.1	N	097	12	56.8	E	19	41	30.32	N	097	12	53.58	E
Magway	VYMW	20	09	56	N	094	56	29	E	20	09	59.8	N	094	56	16.7	E	20	09	12.90	N	094	58	06.90	E
Mandalay	VYMD	21	42	03	N	095	58	38	E	21	42	06.4	N	095	58	25.1	E	21	41	33.83	N	095	58	38.84	E
Mawlamyine	VYMM	16	26	21	N	097	39	39	E	16	26	25.9	N	097	39	25.8	E	16	26	41.47	N	097	39	39.01	E
Mong-Hsat	VYMS	20	32	00	N	099	16	00	E	20	32	04.0	N	099	15	45.8	E	20	31	05.13	N	099	15	30.20	E
Monywar	VYMY	22	14	00	N	095	07	00	E	22	14	03.2	N	095	06	47.4	E	22	13	27.77	N	095	05	36.41	E
Myeik	VYME	12	26	51	N	098	37	33	E	12	26	56.9	N	098	37	19.7	E	12	26	24.34	N	098	37	15.99	E
Myitkyina	VYMK	25	23	15	N	097	21	38	E	25	23	17.5	N	097	21	24.2	E	25	22	58.04	N	097	21	09.60	E
Naypyitaw	VYNT	*Not Applicable*																19	37	24.78	N	096	12	03.60	E
Pakhokku	VYPU	21	20	00	N	095	06	00	E	21	20	03.5	N	095	05	47.5	E	21	24	19.48	N	095	06	40.6	E
Pathein	VYPN	16	48	45	N	094	46	50	E	16	48	49.6	N	094	46	38.0	E	16	48	43.6	N	094	46	25.9	E
Putao	VYPT	27	19	11	N	097	26	30	E	27	19	13.0	N	097	26	15.9	E	27	19	48.09	N	097	25	34.16	E
Sittwe	VYSW	20	07	55	N	092	52	45	E	20	07	58.6	N	092	52	33.6	E	20	07	57.98	N	092	52	21.53	E
Tachileik	VYTL	20	28	54	N	099	56	18	E	20	28	58.1	N	099	56	03.6	E	20	29	05.32	N	099	56	05.30	E
Taungoo	VYTO	19	01	54	N	096	24	02	E	19	01	58.2	N	096	23	49.2	E	19	01	52.61	N	096	24	04.37	E
Thandwe	VYTD	18	27	23	N	094	18	04	E	18	27	27.2	N	094	17	52.1	E	18	27	38.35	N	094	17	58.94	E
Yangon	VYYY	16	54	20	N	096	08	16	E	16	54	24.7	N	096	08	03.4	E	16	54	26.16	N	096	07	59.66	E

Runway Extremities (Thresholds)

Aerodrome		Runway		DGPS WGS-84							
		Designator	Direction	Latitude				Longitude			
Anisakan	VYAS	21	206º	21	58	06.46	N	096	24	45.14	E
		03	026º	21	56	36.51	N	096	24	00.59	E
Ann	VYAN	18	181º	19	46	49.09	N	094	01	35.80	E
		36	001º	19	45	29.65	N	094	01	33.03	E
Bagan	VYBG	18	180º	21	11	26.45	N	094	55	49.63	E
		36	360º	21	10	02.11	N	094	55	48.91	E
Banmaw	VYBM	15	149º	24	16	46.55	N	097	14	28.84	E
		33	329º	24	15	43.43	N	097	15	11.56	E
Bokpyinn	VYBP	17	166º	11	09	47.58	N	098	43	57.61	E
		35	346º	11	08	07.54	N	098	44	23.14	E
Dawei	VYDW	15	147º	14	06	47.06	N	098	11	59.29	E
		33	327º	14	04	54.04	N	098	12	49.07	E
Heho	VYHH	18	181º	20	45	31.34	N	096	47	31.46	E
		36	001º	20	44	07.37	N	096	47	31.09	E
Hommalinn	VYHL	16	160º	24	54	51.91	N	094	54	29.67	E
		34	340º	24	52	59.85	N	094	55	12.91	E
Hpa-an	VYPA	21	210º	16	53	57.08	N	094	40	41.94	E
		03	030º	16	53	19.50	N	094	40	18.35	E
Kalay	VYKL	27	267º	23	11	16.78	N	094	03	29.48	E
		09	087º	23	11	22.80	N	094	02	36.87	E
Kanti	VYKI	21	213º	25	59	41.62	N	095	40	45.44	E
		03	033º	25	58	57.37	N	095	40	12.33	E
Kawthoung	VYKT	20	198º	10	03	27.71	N	098	32	26.79	E
		02	018º	10	02	29.39	N	098	32	07.72	E
Kengtung	VYKG	12	121º	21	17	45.55	N	099	38	45.18	E
		30	301º	21	18	26.33	N	099	37	32.30	E
Kyaukpyu	VYKP	18	180º	19	25	57.72	N	093	32	04.84	E
		36	360º	19	25	13.42	N	093	32	04.89	E
Lashio	VYLS	19	185º	22	59	03.99	N	097	45	10.80	E
		01	005º	22	58	14.99	N	097	45	06.56	E
Loikaw	VYLK	19	185º	19	41	56.18	N	097	12	55.53	E
		01	005º	19	41	04.61	N	097	12	51.64	E
Magway	VYMW	19	188º	20	09	54.51	N	094	58	13.93	E
		01	008º	20	08	31.31	N	094	57	59.88	E
Mandalay	VYMD	17	171º	21	42	12.27	N	095	58	26.72	E
		35	351º	21	40	55.39	N	095	58	50.96	E
Mawlamyine	VYMM	22	216º	16	27	02.88	N	097	39	54.86	E
		04	036º	16	26	20.06	N	097	39	23.17	E
Mong-Hsat	VYMS	12	123º	20	31	18.65	N	099	15	08.17	E
		30	303º	20	30	51.63	N	099	15	52.22	E
Monywar	VYMY	18	181º	22	14	09.86	N	095	05	38.52	E
		36	001º	22	12	45.68	N	095	05	34.31	E
Myeik	VYME	18	185º	12	27	09.56	N	098	37	18.16	E
		36	005º	12	25	39.12	N	098	37	13.83	E
Myitkyina	VYMK	22	217º	25	23	21.43	N	097	21	28.28	E
		04	037º	25	22	34.65	N	097	20	50.91	E
Naypyitaw	VYNT	16	158º	19	38	21.46	N	096	11	38.51	E
		34	338º	19	36	28.08	N	096	12	28.67	E
Pakhokku	VYPU	18	181º	21	25	01.56	N	095	06	42.51	E
		36	001º	21	23	37.39	N	095	06	38.70	E
Pathein	VYPN	24	240º	16	49	03.89	N	094	47	08.88	E
		06	060º	16	48	23.25	N	094	45	42.93	E
Putao	VYPT	17	174º	27	20	22.42	N	097	25	31.68	E
		35	354º	27	19	13.76	N	097	25	40.63	E
Sittwe	VYSW	11	106º	20	07	51.08	N	092	52	50.73	E
		29	286º	20	08	04.88	N	092	51	52.32	E
Tachileik	VYTL	22	217º	20	29	32.81	N	099	56	27.76	E
		04	037º	20	28	37.83	N	099	55	42.84	E
Taungoo	VYTO	18	181º	19	02	51.91	N	096	24	04.53	E
		36	001º	19	00	53.32	N	096	24	04.22	E
Thandwe	VYTD	20	200º	18	28	02.69	N	094	18	08.33	E
		02	020º	18	27	14.01	N	094	17	49.55	E
Yangon	VYYY	21	214º	16	55	25.46	N	096	08	40.04	E
		03	034º	16	55	20.66	N	096	08	48.00	E

Navigational Aids

Navigational Aids			Everest Coordinates								Transformed WGS-84								DGPS WGS-84 Coordinates							
			Latitude				Longitude				Latitude				Longitude				Latitude				Longitude			
AN	NDB	Ann	19	46	09	N	094	02	36	E	19	46	13.0	N	094	02	24.8	E	19	46	12.03	N	094	01	45.77	E
BGN	NDB	Bagan	21	10	48	N	094	55	54	E	21	10	51.5	N	094	55	41.6	E	21	10	35.50	N	094	55	43.30	E
BGO	VOR	Yangon	17	19	06	N	096	31	12	E	17	19	10.6	N	096	30	59.3	E	17	19	06.58	N	096	31	11.55	E
BM	NDB	Banmaw	24	16	00	N	097	15	00	E	24	16	02.8	N	097	14	46.3	E	24	16	9.58	N	097	14	54.59	E
DWI	NDB	Dawei	14	06	00	N	098	12	24	E	14	06	05.5	N	098	12	10.8	E	14	05	58.61	N	098	12	01.67	E
DWI	VOR	Dawei	14	05	48	N	098	12	12	E	14	05	53.5	N	098	11	58.8	E	14	06	01.47	N	098	12	27.98	E
HGU	VOR	Yangon	17	05	00	N	096	15	06	E	17	05	04.7	N	096	14	53.4	E	17	04	49.87	N	096	15	02.49	E
HHO	NDB	Heho	20	44	30	N	096	47	48	E	20	44	33.8	N	096	47	34.9	E	20	44	34.01	N	096	47	44.62	E
IYGN	ILS/LLZ	Yangon	16	53	42	N	096	07	42	E	16	53	46.7	N	096	07	29.4	E	16	53	47.14	N	096	07	33.09	E
IYGN	ILS/GP	Yangon	16	54	42	N	096	08	30	E	16	54	46.7	N	096	08	17.4	E	16	54	49.26	N	096	08	20.32	E
KG	NDB	Kengtung	21	18	06	N	099	38	12	E	21	18	09.8	N	099	37	57.7	E	21	18	09.84	N	099	37	50.01	E
KI	NDB	Kanti	25	59	12	N	095	40	42	E	25	59	14.2	N	095	40	28.8	E	25	59	25.82	N	095	40	42.23	E
KL	NDB	Kalay	23	11	12	N	094	03	30	E	23	11	14.9	N	094	03	17.8	E	23	11	19.19	N	094	03	42.00	E
KP	NDB	Kyaukpyu	19	25	30	N	093	32	18	E	19	25	33.9	N	093	32	06.3	E	19	25	45.10	N	093	32	11.90	E
KT	NDB	Kawthoung	10	03	00	N	098	33	00	E	10	03	06.4	N	098	32	46.8	E	10	03	00.03	N	098	32	24.25	E
LK	NDB	Loikaw	19	41	30	N	097	13	12	E	19	41	34.1	N	097	12	58.8	E	19	41	25.64	N	097	12	47.79	E
LSO	NDB	Lashio	22	58	42	N	097	45	30	E	22	58	45.2	N	097	45	16.3	E	22	58	39.46	N	097	45	19.43	E
LSO	VOR	Lashio	22	59	00	N	097	45	00	E	22	59	03.2	N	097	44	46.3	E	22	58	50.32	N	097	45	15.06	E
MDS	NDB	Yangon	16	52	24	N	096	06	48	E	16	52	28.7	N	096	06	35.4	E	16	52	05.76	N	096	06	21.54	E
MDY	VOR	Mandalay	12	55	58	N	096	07	58	E	12	56	03.4	N	096	07	47.1	E	*Not Available*							
ME	NDB	Myeik	12	26	54	N	098	37	36	E	12	26	59.9	N	098	37	22.7	E	12	27	00.24	N	098	37	10.87	E
MIA	NDB	Mandalay	21	41	18	N	095	59	12	E	21	41	21.4	N	095	58	59.1	E	*Not Available*							
MIA	VOR	Mandalay	21	42	36	N	095	58	42	E	21	42	39.4	N	095	58	29.1	E								
MIA	ILS/GP	Mandalay	21	43	00	N	095	58	30	E	21	43	03.4	N	095	58	17.1	E								
MIA	ILS/LLZ	Mandalay	21	40	42	N	095	58	54	E	21	40	45.4	N	095	58	41.1	E								
MK	NDB	Myitkyina	25	23	12	N	097	21	36	E	25	23	14.5	N	097	21	22.2	E	25	23	01.15	N	097	21	25.54	E
MKA	NDB	Nampong	25	21	00	N	097	17	00	E	25	21	02.5	N	097	16	46.2	E	*Not Available*							
MM	NDB	Mawlamyine	16	26	24	N	097	39	42	E	16	26	28.9	N	097	39	28.9	E	16	26	35.95	N	097	39	27.83	E
MS	NDB	Mong-Hsat	20	32	00	N	099	16	00	E	20	32	04.0	N	099	15	45.8	E	20	31	01.37	N	099	15	25.61	E
MW	NDB	Magway	20	09	54	N	094	56	30	E	20	09	57.8	N	094	56	17.7	E	20	09	40.26	N	094	58	29.04	E
NS	NDB	Namsang	20	53	06	N	097	44	12	E	20	53	09.8	N	097	43	58.5	E	*Not Available*							
NT	NDB	Naypyitaw	*Not Applicable*																19	37	57.20	N	096	12	04.04	E
PA	NDB	Hpa-an	16	53	30	N	097	40	42	E	16	53	34.8	N	097	40	28.8	E	16	53	31.62	N	097	40	30.48	E
PT	NDB	Putao	27	19	12	N	097	26	30	E	27	19	14.0	N	097	26	15.9	E	27	19	33.78	N	097	25	26.96	E
PTN	NDB	Pathein	16	48	00	N	094	47	00	E	16	48	04.6	N	094	46	48.0	E	16	48	47.16	N	94	46	46.90	E
PTN	VOR	Pathein	16	48	48	N	094	46	48	E	16	48	52.6	N	094	46	36.0	E	16	48	48.78	N	94	46	20.00	E
SW	NDB	Sittwe	20	07	48	N	092	53	12	E	20	07	51.6	N	092	53	00.6	E	20	08	02.45	N	092	52	58.98	**E**
TD	NDB	Thandwe	18	27	24	N	094	18	06	E	18	27	28.2	N	094	17	54.1	E	18	27	18.07	N	094	18	03.76	**E**
TGO	NDB	Taungoo	19	00	24	N	096	24	17	E	19	00	28.2	N	096	24	04.2	E	19	00	28.56	N	096	24	04.28	**E**
TGU	VOR	Taungoo	19	02	48	N	096	24	00	E	19	02	52.2	N	096	23	47.2	E	19	03	21.58	N	096	24	04.62	**E**
TL	NDB	Tachileik	20	28	54	N	099	56	18	E	20	28	58.1	N	099	56	03.6	E	20	28	58.33	N	099	56	03.98	**E**
YGN	NDB	Yangon	17	04	30	N	096	14	30	E	17	04	34.7	N	096	14	17.4	E	17	04	42.54	N	096	14	18.18	**E**

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Department of Civil Aviation
Aeronautical Information Services
ATC Operations Building
Yangon International Airport
Mingaladon, Yangon 11021
MYANMAR

AIC

01/10

01 December 2010

AIRAC SYSTEM/AMENDMENTS TO AIP MYANMAR FOR THE YEAR 2011

1. The pre-determined dates of the Regulated system for publication of aeronautical information are applicable for the year 2011 are hereby notified for information and guidance to all concerned.

2. Such publication shall be issued by AIP Supplement and identified by the acronym "AIRAC".

3. The following table contains the latest dates by which AIP Supplement materials should reach AIS.

Latest dates for information to reach AIS	*Publication date of AIP Supplement*	*Effective date of implementation*
25 November 2010	2 December 2010	13 January 2011
23 December 2010	30 December 2010	10 February 2011
20 January 2011	27 January 2011	10 March 2011
17 February 2011	24 February 2011	7 April 2011
17 March 2011	24 March 2011	5 May 2011
14 April 2011	21 April 2011	2 June 2011
12 May 2011	19 May 2011	30 June 2011
9 June 2011	16 June 2011	28 July 2011
7 July 2011	14 July 2011	25 August 2011
4 August 2011	11 August 2011	22 September 2011
1 September 2011	8 September 2011	20 October 2011
29 September 2011	6 October 2011	17 November 2011
27 October 2011	3 November 2011	15 December 2011

4. The proposed amendment programme to the publication of Amendment to AIP Myanmar 3rd Edition for the year 2011 is hereby notified in accordance with the following schedule:

AMDT NR	**PUBLICATION DATE**
1/11	1 January 2011
2/11	1 April 2011
3/11	1 July 2011
4/11	1 October 2011

5. The following AIP Supplements are still in force:

2002	05
2003	01
2004	06, 10,12, 16, 17, 20, 21
2005	02,03
2007	02
2008	01
2009	02, 03, 04, 05, 06, 07, 08, 09, 10, 12, 13, 15, 18, 23, 31
2010	01

This AIC cancels AIC 6/09 dated 1 December 2009.