PAKISTAN International Airlines
Great People to Fly With

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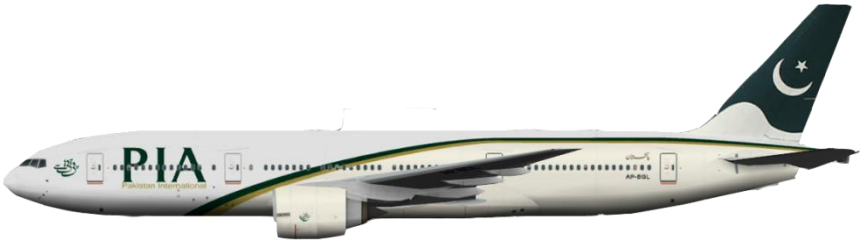
Edition 3
Revision 04
Issue Date Jun 08, 2023

B-777
TRANSITION TRAINING SYLLABUS



PAKISTAN INTERNATIONAL AIRLINES

TRAINING DIVISION
FLIGHT OPERATIONS DEPARTMENT

HEADQUARTERS
Pakistan Civil Aviation Authority
Flight Standards Directorate
Terminal-I, Jinnah Int'l. Airport
Karachi – 75200, Pakistan
Tel # (92-21) 99242766, 99072630-31
Fax # (92-21) 99242767
E-mail: FlightStandard.Directorate@caapakistan.com.pk
Website: www.caapakistan.com.pk

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P.O. Box (Flt Ops P.I.A (KAP)
03 AUG 2023

Ref: HQCAA / 1076 / 021 / FSAC / 9894

Dated: 02ND August, 2023

Dear Sir,

AMENDMENT IN B777 TRANSITION TRAINING SYLLABUS EDITION III REVISION IV DATED 08TH JUNE, 2023 M/S PAKISTAN INTERNATIONAL AIRLINES CORPORATION LIMITED

Reference letter CPCT / R-05 / 2416 dated 07th July, 2023.

2. Enclosed please find duly approved and stamped ***B777 TRANSITION TRAINING SYLLABUS EDITION III REVISION IV DATED 08TH JUNE, 2023.***

3. You are being advised to ensure that in case of any contradiction between the ***B777 TRANSITION TRAINING SYLLABUS EDITION III REVISION IV DATED 08TH JUNE, 2023*** and Civil Aviation Rules, Air Navigation Orders, Air Safety Circulars or any other Instructions/ Directives issued by Pakistan Civil Aviation Authority from time to time the later shall have precedence.

Encl: ***As Stated***

(CAPT. QAISER YAR KHAN)
Director Flight Standards

To,

Director Flight Operations,
M/s Pakistan International Airlines,
JIAP, Karachi

Copy to:-

- Technical Library, FSD, PCAA

cpting

0.1 APPROVAL

STEP	NAME & DESIGNATION	SIGNATURE	DATE
Prepared by	Mohammad Saleem Mgr. Crew Trg & Lic.		09-02-15
Reviewed by	Capt. Masood Opel CP B-777		090215
Vetted by	Capt. Farrukh Cheema CP Crew Training		09.02.15
Approved by	Capt. Salman Azhar Director Flt. Ops.		9/2/15
PCAA Approval No.	HQCAA/1076/038/FSAC/8554		
Effective Date	07TH MAY, 2015		

FLIGHT STANDARDS DIRECTORATE APPROVED CAA PAKISTAN

07 MAY 2015

SIGNATURE &STAMP OF APPROVING AUTHORITY

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0.2 RECORD OF REVISIONS

Edition	Revision	Issue Date	Insertion Date	Sign
Edition 1				
Edition 2	00	Dec 31, 12		
Edition 2	01	Sep 24, 14		
Edition 3	00	Jan 26, 15		
Edition 3	01	Dec 27,17		
Edition 3	02	Jul 13,18		
Edition 3	03	Apr 17,23		
Edition 3	*04*	*Jun 08,23*		

FLIGHT STANDARDS DIRECTORATE APPROVED CAA PAKISTAN 01 AUG 2023

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0.3 LIST OF EFFECTIVE PAGES

Chapter #	Description	Effective pages	Rev #	Rev Date
0	Record of Revision & LEP	1 - 6	00	Jan 26, 2015
TOC	Table of contents	1 - 6	00	Jan 26, 2015
1	Transition Training/CBT Program	1 - 22	00	Jan 26, 2015
2	FBS - Introduction	1 - 4	00	Jan 26, 2015
3	FBS Lesson-1	1 - 6	00	Jan 26, 2015
4	FBS Lesson-2	*2 & 6*	*04*	*Jun 08, 2023*
5	FBS Lesson-3	*2 & 4*	*04*	*Jun 08, 2023*
6	FBS Lesson-4	*2, 4 & 5*	*04*	*Jun 08, 2023*
7	FBS Lesson-5	*2,4 & 5*	*04*	*Jun 08, 2023*
8	FBS Lesson-6	*2,4, 5 & 6*	*04*	*Jun 08, 2023*
9	FBS Lesson-7	*2, 4 & 5*	*04*	*Jun 08, 2023*
10	FBS Lesson-8	*2, 4 & 5*	*04*	*Jun 08, 2023*
11	FBS Lesson-9	*2, 4 & 5*	*04*	*Jun 08, 2023*
12	FBS Lesson-10	*2 & 4*	*04*	*Jun 08, 2023*
13	FFS -Introduction	1 - 4	00	Jan 26, 2015
14	Special Training Programs	1 - 6	00	Jan 26, 2015
15	FFS Lesson-1	2	*04*	*Jun 08, 2023*
16	FFS Lesson-2	1 - 6	00	Jan 26, 2015

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Chapter #	Description	Effective pages	Rev #	Rev Date
17	FFS Lesson-3	1 - 10	00	Jan 26, 2015
18	FFS Lesson-4	1 - 6	00	Jan 26, 2015
19	FFS Lesson-5	*2*	*04*	*Jun 08, 2023*
20	FFS Lesson-6	1 - 8	00	Jan 26, 2015
21	FFS Lesson-7	1 - 6	00	Jan 26, 2015
22	FFS Lesson-8	*2*	*04*	*Jun 08, 2023*
23	FFS Lesson-9	2	*04*	*Jun 08, 2023*
24	FFS Lesson-10	1 – 4	*03*	*Apr 17, 2023*
25	FFS Lesson-11	1 – 18	00	Jan 26, 2015
26	FFS Lesson-12	*5-6*	*02*	*Jul 13, 2018*

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1. TRANSITION TRAINING

Objective

To enable the Crew to obtain knowledge of aircraft systems, attain proficiency in the application of operational, abnormal and emergency procedures, and to provide hands on training thereof. At the end of the training program, each crew member must be capable, under all circumstances of carrying out his task, safely and efficiently.

A trainee will be allowed to pass from one phase to the next only if he has attained the skill necessary for the required tasks.

Elements

This training will consist of the following:

Computer based Training (CBT program developed and provided by Boeing / ALTEON Company)
FBS / CSS Training
Full Flight Simulator (FFS) Training
Low Visibility Operations – Cat-III Training
Landing Training
Special Training Programmes
Line Training

Documentation

Flight Crew Operating Manual Vol. 1
Flight Crew Operating Manual Vol. 2
Checklists – Normal / Abnormal (QRH)
Flight Crew Training Manual
Minimum Equipment List
Weight and Balance
TCAS II Booklet
Operations Engineering Technical Bulletin / Operations Engineering Information Bulletin.

1.1 CBT PROGRAM AT PIA TRAINING CENTRE

Objective

The primary object of the CBT program is to provide flight crew members with the necessary knowledge for understanding the basic functions of aircraft systems, the use of individual system components, integration of the aircraft systems, the understanding / application of Special Operations & Performance and the procedures on the use of safety equipment

Upon completion of the CBT program, the trainee will be sufficiently prepared to enter the FBS/CSS/FFS Training.

Instructor Qualification

This Training will be conducted and supervised by the qualified PIA Training Centre Instructors as defined in Operations Manual Part-III (Operations Technical Training Manual) by assisting the pilots and supplementing through lectures when necessary.

Training Aids

The following Training Aids will be used in this Training Program.

CBT program for individual crew (CPU, Monitor, Headset and Keyboard)

Transparencies where necessary

Cockpit illustration panel charts

White Board/Marker Pens

Duration and Location

The duration of the training program is two weeks (10 working days) which equals to 55 hours of instruction and will be held at PIA Training Centre.

Day Plan

The Day Plan only gives the main contents. CBT program covers the subjects in detail with the help of Computer Based Training which has been prepared by Boeing/ ALTEON Company.

Hrs	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
0800 – 0900 hrs	General Introduction Course Overview	Crew Alerting System EICAS Introduction Practice Exercises/ Test	Engines Overview EICAS indications and EEC Oil, Fuel and Vibration Practice Exercises/ Test	Auto Flight Introduction and Pre-flight Auto Flight Takeoff, Climb, Cruise and Auto throttle Controls Practice Exercises/ Test	Communication Data Links FMC Pre-flight Practice Exercises/ Test
0900 – 1000 hrs	Introduction to CBT Airplane Familiarization	Electronic Checklist -I Electronic Checklist-II Practice Exercises/ Test	Engine Ignition and Starting Thrust Reversers Practice Exercises/ Test	Auto Flight Overview , Pre-flight, Takeoff, Climb and Cruise Practice Exercises/ Test	FMC Route Entry Part-I Practice Exercises/ Test
	Break 1000-1020	Break 1000-1020	Break 1000-1020	Break 1000-1020	Break 1000-1020
1020 – 1120 hrs	Aircraft Lighting Flight Deck Instruments Introduction Practice Exercises/ Test	APU Electrical Systems Components, Sources and Operations Practice Exercises/ Test	ADIRS PFD – Pitot/ Static Displays Practice Exercises/ Test	Auto Flight Cruise, Descent, Approach, Landing and Go-around. Auto Flight Additional Features, Approach and Auto Land Practice Exercises/ Test	FMC Route Entry Part-II Practice Exercises/ Test

Hrs	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
1120 – 1220 hrs	FMC Familiarization Practice Exercises/ Test	Electrical Systems -Power Distribution Electrical System Non-normal Practice Exercises/ Test	PFD – Attitude, Radio Altimeter and Other Displays NAV display – VOR & Approach Practice Exercises/ Test	CDU Control of EFIS and Display Select Panel Communication – VHF, HF and Interphone Systems Practice Exercises/ Test	Auto Flight VNAV, Non Precision Approach and Go-around Practice Exercises/ Test
	Break 1220-1230	Break 1220-1230	Break 1220-1230	Break 1220-1230	Break 1220-1230
1230 – 1330 hrs	Electronic Flight Instruments Overview Practice Exercises/ Test	Fuel System Overview and Operations Fuel System Non-normal Practice Exercises/ Test	NAV display – Map and Plan Practice Exercises/ Test	Communication – SATCOM, Voice communication and Crew Alerting System Practice Exercises/ Test	Auto Flight Non-Normal Practice Exercises/ Test

Hrs	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10
0800 – 0900 hrs	• FMC Climb • FMC Cruise Part-I Practice Exercises/ Test	FMC Pre-flight Practice Exercises/ Test	Bleed Air Heating and Air-conditioning Practice Exercises/ Test	Hydraulic Systems Overview and Operation Hydraulic Systems Non-normal Practice Exercises/ Test	Crew Alerting System EGPWS, PWS TCAS Practice Exercises/ Test
0900 – 1000 hrs	FMC Cruise Part-II FMC Holding Practice Exercises/ Test	• FMC Climb and Cruise • Practice Exercises/ Test	• Pressurization • Anti-Ice and Rain Protection • Practice Exercises/ Test	• Landing Gear • Brake Systems • Practice Exercises/ Test	Oxygen and Emergency Equipment Doors, Slides and Evacuation Equipment Practice Exercises/ Test
	Break 1000-1020	Break 1000-1020	Break 1000-1020	Break 1000-1020	Break 1000-1020
1020 – 1120 hrs	FMC Flight Plan Changes FMC Route Offset and Fix Info Practice Exercises/ Test	FMC Flight Plan Changes and Flight Progress Data Practice Exercises/ Test	• Integrated Standby Flight Instruments.* • Clocks • ATC Transponder and Wx Radar Practice Exercises/ Test	• Flight Control Overview • Flight Control Pitch and Yaw Practice Exercises/ Test	• Performance • Takeoff Data Cards Practice Exercises/ Test

Hrs	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10
1020 – 1120 hrs	FMC Flight Plan Changes FMC Route Offset and Fix Info Practice Exercises/ Test	FMC Flight Plan Changes and Flight Progress Data Practice Exercises/ Test	• Integrated Standby Flight Instruments.* • Clocks • ATC Transponder and Wx Radar Practice Exercises/ Test	• Flight Control Overview • Flight Control Pitch and yaw Practice Exercises/ Test	• Performance • Takeoff Data Cards Practice Exercises/ Test
1120 – 1220 hrs	FMC Approaches, STARS and Diversions FMC Descent Practice Exercises/ Test	FMC Descent Holding and Approaches FMC Performance Practice Exercises/ Test	Engine and APU Fire Protection Practice Exercises/ Test	Flight Control Roll Practice Exercises/ Test	Performance Climb and Cruise Data Cards Practice Exercises/ Test
	Break 1220-1230	Break 1220-1230	Break 1220-1230	Break 1220-1230	Break 1220-1230
1230 – 1330 hrs	• FMC Non-normal • Practice Exercises/ Test	• Reduce Thrust Takeoff • Practice Exercises/ Test	Cargo and Wheel Well Fire Protection Practice Exercises/ Test	Flight Control High Lift Devices Practice Exercises/ Test	• Performance • Descent, Approach and Landing Data • Practice Exercises/ Test

* To be covered by PTC Instructor using Overhead Projector and Transparencies

Note 1: A test to be taken at the end of the course, duration 2 hours.

Note 2: Aircraft variants of the entire B-777 fleet of PIA to be covered by PTC Instructor at the end of the course.

Day	**Contents**
DAY 1	
1/1	General Introduction Course Overview Familiarization with Manuals
2/1	Introduction to CBT The review of CBT Program Airplane Familiarization Airplane Exterior Passenger Cabin Flight Deck and Systems
3/1	Aircraft Lighting Exterior Lighting Interior Lighting Test Flight Deck Instruments Introduction – Primary Display System – Inboard Display Selectors – Display Select Panel – EFIS Control Panel – Cursor Control Devices – Display Brightness Control – Display Control Switches – Non-Normal Conditions – Practice/ Test

4/1 FMC Familiarization

- FMC
- CDU
- Using the CDU
- Practice/ Test

5/1 Electronic Flight Instruments Overview

- EFIS Introduction
- PFD – Airspeed, Attitude and Altitude
- PFD – VSI, Heading and Auto flight Status
- ND Approach and VOR Modes
- ND Map and Plan Modes
- Practice/ Test

DAY 2

Day **Contents**

1/2 Crew Alerting System EICAS

- Display and Messages
- System Operation
- Airplane Status Messages
- System Inhibits
- Discrete Warnings
- Non-normal Conditions
- Practice/ Test

2/2 Electronic Checklist-I

- Introduction
- Normal Checklist
- Non-normal Checklist
- Normal and Non-normal Keys
- Non-normal Checklist Queues
- Practice/ Test

Electronic Checklist-II

- Menu Keys
- Un-annunciated Checklist
- Operational Notes
- Deferred Items
- Resets and Overrides
- Practice/ Test

3/2 <u>APU</u>

- APU Introduction
- Starting and Shut down
- Non-normal Conditions
- Practice/ Test

4/1 <u>Electrical Systems</u>

- Main Electrical Components
- Primary and Secondary External Power
- APU Power
- Generator Power
- Electrical System Configuration for Flight
- Airplane Shutdown and Security
- Practice/ Test

4/2 <u>Electrical Power Distribution</u>

- Ground Handling and Ground Service Buses
- Cabin Power Switches
- DC Power System
- Flight Control DC System
- Auto land Electrical Configuration
- Practice/ Test

<u>Non-normal's</u>

- Backup Power System
- Standby Power System
- Non-normal Operations
- Practice/ Test

5/2 <u>Fuel System</u>

- Components and Locations
- Operation Prior to Flight
- Operation In-flight and After Flight
- Fuel Jettison System
- Practice/ Test

<u>Fuel System Non-normal</u>

- Fuel Cross feed
- Fuel Non-normal Messages
- Practice/ Test

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DAY 3

Day	**Contents**
1/3	Engines – Overview – Engine Indications – EEC Normal Mode – EEC Alternate Mode – EEC Non-normal – Practice/ Test Engine – Oil, Fuel, Vibration – Oil System – Fuel System – Vibration Monitoring – Non-normal Operation – Practice/ Test
2/3	Engine – Ignition and Starting – Components – Auto Start – Manual Start – In-flight Start – Continuous Ignition – Shut Down – Non-normal Operations – Practice/ Test Thrust Reversers – Overview – Normal Operation – Non-normal Operation – Practice/ Test
3/3	ADIRS – Air Data Inertial Reference System – Overview – Air Data Modules – ADIR Unit – ADIRU Pre-flight Alignment and Operations – Secondary Attitude Air Data Reference Unit (SAARU)

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- Non-normal Operation
- Practice/ Test

<u>PFD – Pitot Static Displace</u>

- PFD Overview
- Airspeed Indication
- Attitude Indication
- Altitude Indication
- Vertical Speed Indication
- Practice/ Test

4/3 <u>PFD – Attitude – Radio Altitude and Other Displays</u>

- Miscellaneous Indications
- ILS Approach Indications
- Minimums
- Heading, Track Indications
- Air Data and Attitude Source Selection Switch
- PFD Pre-flight
- Non-normal Operation
- Practice/ Test

<u>NAV Display/ VOR Approach</u>

- NAV Display Overview
- Heading and Track Indication
- NAV Radio Information and Tuning
- Miscellaneous Indications
- Centered Mode Display Differences
- Non-normal Operations
- Practice/ Test

5/3 <u>NAV Display – Map and Plan</u>

- Map and VOR / Approach Differences
- Map Symbology
- Map Mode
- Heading Reference
- NAV Source Switch
- ND Pre-flight
- Non-normal Operations
- Practice/ Test

DAY 4

Day	**Contents**
1/4	Auto flight Introduction and Pre-flight – Introduction – Pre-flight (Performance Data Not Yet Received) – Pre-flight (Performance Data Received) – Pre-flight Summary – Practice/ Test Auto flight – Takeoff, climb, Cruise and Auto throttle Controls – Overview – Takeoff – Flight Level Change – Level Flight – Heading Modes – Auto throttle controls – Practice/ Test
2/4	Auto flight – Overview, Pre-flight, Takeoff, Climb and Cruise – Overview – Pre-flight Phase – Use of Auto flight System – Takeoff Phase – Use of Auto flight System – Climb Phase – Use of Auto flight System – Cruise Phase – Use of Auto flight System – Practice/ Test
3/4	Auto flight –Cruise, Descent, Approach, Landing and Go-around – Cruise – Additional Features – Descent – Additional Features – Approach – Additional Features – Go-around – Additional Features – Practice/ Test Additional Features – Approach and Landing – Takeoff – Climb and Cruise – Approach and Landing – Practice / Test

4/4 CDU Control of EFIS and DSP
- Alternate DSP Control
- Alternate EFIS Control
- Practice/ Test

Communications – VHF, HF and Interphone Systems
- Audio Control Panel
- HF / VHF Communication
- Flight and Service Interphone System
- Cabin Interphone System
- PA System
- SELCAL Communication
- Flight Deck Voice Recorder
- Communication Non-normal
- Practice/ Test

Communications
- SATCOM Voice Communication
- Crew Alerting system Communication
- Non-normal Conditions
- Practice/ Test

DAY 5

Day **Contents**

1/5 Communication Data Links
- ACARS
- Data Link Communication
- Flight Deck Printer
- Communication
- Crew Alert System
- Non-normal Conditions
- Practice/ Test

2/5 FMC Route Entry Part-I
- Introduction
- Enter a Route
- Enter a Departure
- Identify a Route Discontinuity
- Enter a Company Route
- Uplink a Route

- Route – 2
- Data Link Pre-flight
- Practice/ Test

3/5 <u>FMC Route Entry Part-II</u>

- Introduction Legs page
- Waypoint Airspeed Restrictions
- Waypoint Altitude Restrictions
- Practice/ Test

4/5 <u>Auto flight – VNAV, Non-precision Approaches and Go-around</u>

- VNAV Engage
- VNAV Altitude Control
- VNAV Cruise and Descent
- Non-precision Approaches
- Go-around
- Practice/ Test

5/5 <u>Auto flight Non-normal's</u>

- Autopilot Non-normal
- Auto throttle Non-normal
- Auto land Non-normal
- Test

<u>DAY – 6</u>

<u>Day</u> **<u>Contents</u>**

1/6 <u>FMC Climb</u>

- Overview
- Climb Thrust
- Climb Page
- Climb Page Modifications
- Practice/ Test

<u>FMC Cruise Part-I</u>

- Initial Level Off From Climb
- Speed Changes
- Step Climb with Cruise Page
- Step Climb with Legs Page

- Route Data Pages
- Wind Pages Updating and Wind Data Uplink
- Practice/ Test

2/6 <u>FMC Cruise Part-II</u>

- Progress Page
- Position Report Page
- Reference NAV Data Page
- Position Reference Pages
- Practice/ Test

<u>FMC Holding</u>

- Enter Holding at Present Position
- Enter Holding at Fix Not in a Route
- Exit Holding – Exit Armed
- Exit Holding – At a Fix in a Route
- Exit Holding – Direct to Waypoint
- Delete Holding
- Practice/ Test

3/6 <u>FMC Flight Plan Changes</u>

- Route Modifications and Discontinuities
- Creating Waypoints
- Creating Courses
- Route Page Operations
- Practice/ Test

<u>FMC Route Offset and Fix Info</u>

- Route Offset Entry and Removal
- Fix Info – Fix Entry and Abeam Entry
- Fix Info – Creating Waypoints and Bearing/ Distance
- Predicted ETA/ Altitude
- Practice/ Test

4/6 <u>FMC Approaches, STARS and Diversions</u>

- Arrival Selection
- Approach Reference Operations
- Alternate Selection
- Divert to Alternate Airport
- VFR Approaches
- Practice/ Test

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5/6 FMC Non-normal's

- Engine Out Climb and Cruise
- CDU Failure
- FMC Failure
- Alternate Navigation Legs Page
- Alternate Navigation Progress Page
- Practice/ Test

DAY – 7

Day **Contents**

1/7 FMC Pre-Flight

- Ident
- Position Initialization
- Route/ NAV Radio
- Performance Initialization
- Thrust Limit and Takeoff Reference
- Practice/ Test

2/7 FMC Climb and Cruise

- Climb and Cruise Data
- Progress Data
- RTA Progress
- Position Report
- Reference NAV Data
- Position Reference
- Practice/ Test

3/7 FMC Flight Plan Changes and Flight Progress Data

- Route Data and Winds
- Step Climb Part-I
- Course Intercepts
- Step Climb Part-II
- Abeam Points
- Offset and Airways
- LAT / Long Reporting Points
- Practice/ Test

4/7 FMC Descents, Holding and Approach

- Descent Preparation
- Descent and Hold
- Approach Intercept
- Alternates
- VFR Arrivals
- Alternate Data Link
- Practice/ Test

FMC Performance

- Introduction
- Cost Index
- ECON Speed
- Altitude Information
- Engine Out Performance
- FMC Failure
- FMC Takeoff Speeds
- Test

5/7 Reduce Thrust Takeoff

- Methods of Reducing Takeoff Thrust
- Derate – Description and Performance Improvement
- Assume Temperature – Description, Restriction, Data Sources
- Little More About Reduced Thrust Takeoff
- Practice/ Test

DAY – 8

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1/8 Bleed Air

- System Overview
- APU Bleed Air
- Engine Bleed Air
- Bleed Air Isolation
- Non-normal Operations
- Test

Heating and Air-conditioning

- Overview
- Pack Operation and Temperature Control
- Recirculation Fans

- Equipment Cooling, Forward Cargo Air Conditioning
- AFT and Bulk Cargo Heating
- Shoulder and Foot Heating
- Non-normal Operations
- Practice/ Test

2/8 <u>Pressurization</u>

- Overview
- System Operation
- Non-normal Operation
- Test

<u>Anti-ice and Rain Protection</u>

- Anti-ice and Rain Components and Location
- Primary Ice Detection System
- Engine Anti-ice
- Wing Anti-ice
- Window Heat
- Windshield Rain Removal
- Non-normal Operation
- Practice/ Test

3/8 <u>Integrated Standby Flight Instruments (To be covered by PTC Instructor)</u>

- Introduction
- Standby Attitude Indicator
- Standby ASI
- Standby Altimeter
- Standby Compass

<u>Clocks</u>

- Clock Introduction
- Clock Set Time , Elapse Time, Chronograph
- Test

<u>ATC Transponder and Wx Radar</u>

- ATC Transponder
- Wx Radar
- Non-normal Operation
- Practice/ Test

4/8 <u>Engine and APU Fire Protection</u>

- Components
- Engine Fire Protection
- APU Fire Protection
- APU Ground Control Panel
- Non-normal Operations
- Practice/ Test

5/8 Cargo and Wheel Well Fire Protection

- Cargo Fire Protection
- Wheel Well Fire Protection
- Lavatory Smoke Detection and Extinguisher
- Non-normal's
- Practice/ Test

DAY – 9

Day **Contents**

1/9 Hydraulic Systems

- Hydraulic Components
- Hydraulically Powered Systems
- Hydraulic Panel
- Practice/ Test

Hydraulic Systems Non-normal

- Non-normal Indications
- Demand Pump ON
- Isolation Valves
- RAM Air Turbine
- Test

2/9 Landing Gear

- Normal Operation
- Non-normal Operation
- Nose and Main Gear Steering
- Practice/ Test

Brake Systems

- Wheel Brakes
- Parking Brakes
- Auto Brakes
- Non-normal Operation

- Practice/ Test

3/9 <u>Flight Control Overview</u>

- Fly-by-wire Introduction
- Primary Flight Control System
- Protection Features
- Modes of Operation
- High Lift Devices
- Control and Indicators
- Test

<u>Flight Control Pitch and Yaw</u>

- Pitch Control
- Pitch Trim
- Yaw Control
- Pitch and Yaw Non-normal Operation
- Practice/ Test

4/9 <u>Flight Control – Roll</u>

- Ailerons and Flaprons
- Roll Trim
- Spoilers
- Protection Features
- Non-normal's
- Additional Flight Control Non-normal's
- Test

5/9 <u>Flight Control – High Lift Devices</u>

- Primary Mode
- Secondary Mode
- Alternate Mode
- Other Non-normal Operations
- Composite Review
- Practice/ Test

DAY – 10

Day	**Contents**
1/10	Crew Alerting System – GPWS/ PWS – GPWS Displays and Indications – GPWS Operation – Predictive Winds hear System – GPWS Controls – Tail Strike Indicating System – Practice/ Test TCAS – Types of Alerts – System Operation – Displays and Indications – Operating Practices – Inhibits Non-normal Conditions – Practice/ Test
2/10	Oxygen and Emergency Equipments – Flight Crew and Passenger Oxygen System – Emergency Lighting – Flight Deck Side Windows – Emergency Equipment – EGRESS and Evacuation – Practice/ Test Doors, Slides and Evacuation Equipment – Exterior Doors – Passenger Entry Doors – Evacuation Slides/ Rafts – Non-normal Conditions – Practice/ Test
3/10	Performance – Takeoff Data Guards – Practice Exercises
4/10	Performance – Climb and Cruise Data – Practice Exercises

5/10 Performance

- Descent Approach and Landing Data
- Practice Exercises

DAY – 11

TEST & REVIEW

Break

VARIANTS/ DIFFERENCES TRAINING IN B-777 FLEET

1. FIXED BASE SIMULATOR (INTRODUCTION)

The Fixed Base Simulator (FBS) is a significant part of the training program and is conducted concurrently along with Computer Based Training. It consists of Days developed from specific objectives to progressively train automatic, normal and non-normal flight operations. Each Day is a flight scenario designed to integrate weather, operating environment, Communications, thrust management, automated airplane maneuvering, and procedures. Operating philosophy and Crew Resource Management (CRM) is an integral part of each Day.

Your goal is to attain proficiency in normal procedures using the flight management system (FMS) and auto flight system. Proficiency is defined as “the ability to perform tasks in real time without assistance”. Proficiency objectives are identified in each Day with asterisks (*). You must attain proficiency in all identified objectives prior to progressing to FFS training. You must also develop familiarity in non-normal procedures. Familiarity is defined as “understanding the process used to perform a task”. Familiarity objectives are identified in each Day with asterisks (*). Evaluation of your performance will be on a continuous basis (progressive evaluation).

Each Day has 3 parts: the briefing, FBS period, and debriefing.

- The briefing includes a discussion of the proficiency objectives, flight plan and significant events, and required level of performance. Briefing items are referenced to the appropriate sections of the Operations Manual (FCOM) or the Flight Crew Training Manual (FCTM).
- The FBS period affords the crew the opportunity to gain “hands on” system and procedural experience in the airplane environment.
- During the debriefing, a critique will be conducted consisting of a review of the Day and the performance level achieved.

The Days progress from simple to complex. The earlier Days stress normal procedures and the introduction of selected non-normal procedures. The Days progress to include flights that reinforce normal procedures while integrating more complex clearances, flight plan changes, and non-normal procedures. All flights use the FMS and auto flight system to control the airplane.

Related route, weather, and performance data is specified in each Day. Airport information is obtained from the approach charts provided during training.

Crew are expected to become familiar with the flight scenario prior to each Day.
The following pages provide planning data and specific procedures for each Day.

FBS PROGRAM OBJECTIVES

Train to proficiency in performing airplane normal procedures during all phases of flight.
Train to proficiency in maintaining automatic airplane control and navigation using the auto flight system and Flight Management System (FMS).
Introduce selected non-normal procedures.

TRAINING MATERIALS

Training Manual
Operations Manual
Flight Crew Training Manual
Navigation plates (Jeppesen)

GENERAL GUIDANCE TO INSTRUCTORS

To ensure standardization, Instructors should closely adhere to the Day Plans, Instructor Guide and established teaching procedures. Suggestions for change are welcome and should be addressed to the Chief Pilot Training.

Fixed Base Simulator (FBS) training is designed to teach normal and non-normal procedures. Systems training are the function of the Computer Based Training (CBT) phase, and FBS sessions should only be used for the reinforcement of systems knowledge where it is required. The primary purpose of FBS training is to integrate systems knowledge with operating procedures, both normal and non-normal, in order to prepare the trainees for the next stage of their training. Instructors should emphasis to the trainees that system information must be derived from the CBT and not during FBS training.

Similarly, the purpose of FBS training is not to teach flying techniques. FBS Days consist of LOFT type scenarios, but it is not necessary to complete each stage of the flight in full. The scenarios are used merely to create situations which require the use of laid down procedures, thereby providing the trainees with the familiarity and practice the need to become proficient.

To this end, motion will not be used, and the autopilot will be engaged at a height of 200 feet after take off, remaining engaged for the rest of the flight. All landing will be accomplished by Auto land

Instructors should positively discourage trainees from treating the Day as training for a flight from a specific point of departure to a specific destination. Briefings should be practiced in the pre-Session Briefing period so that, during FBS sessions, neither Emergency, Departure nor Arrival Briefings need be conducted, and the Checklist response to these items will always be “Complete”.

Instructors should make use of **Position Freeze, Flight Freeze** (if required), or a Repositioning function in order to concentrate on

accomplishing a procedure rather than on maintaining continuous progress along the route of flight. ATC clearances should be given as required by the instructor and should contain standard phraseology as practiced in actual airspace to maintain realism.

Initial sessions of FBS should concentrate on streamlining checklist use and practicing procedures in the cockpit. Non-normal procedures are introduced in the later FBS sessions. The intent is to teach trainees how to accomplish representative non-normal procedures in a systemized manner along with normal procedures.

Multiple failures should not be simulated which can hamper trainee's progress. When a non-normal procedure has been accomplished, the malfunction should be cleared and the system reset.

Instructors to ensure that during intermediate/final level off vertical speed is reduced to 1000 fpm when 1000 ft to level off altitude, in order to reduce frequency of unnecessary TCAS 'RA' activation.

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DAY SUMMARY

This Day provides flight deck familiarization while practicing normal preflight and post flight procedures as defined in the Operations Manual. There is no flight because the Day focus is on the introduction of normal procedures. Scan flow patterns and crew duty orientation are introduced and practiced. Electronic checklist concepts are also introduced. Seating controls and flight deck lighting are reviewed, as well as APU, electrical, EICAS, and fuel systems as they occur during the procedures.

DAY OBJECTIVES

- Introduce preflight and post flight normal procedures.
- Introduce flight management system (FMS) tasks during preflight.

ROUTE OF FLIGHT

ORIGIN	MANCHESTER (EGCC) Gate ------- RWY 23 R
ROUTE	COMPANY ROUTE
DEPARTURE	SONEX ONE ROMEO (SONE 1R)
DESTINATION	MANCHESTER (EGCC)
FLIGHT NUMBER	PIA 777

PERFORMANCE

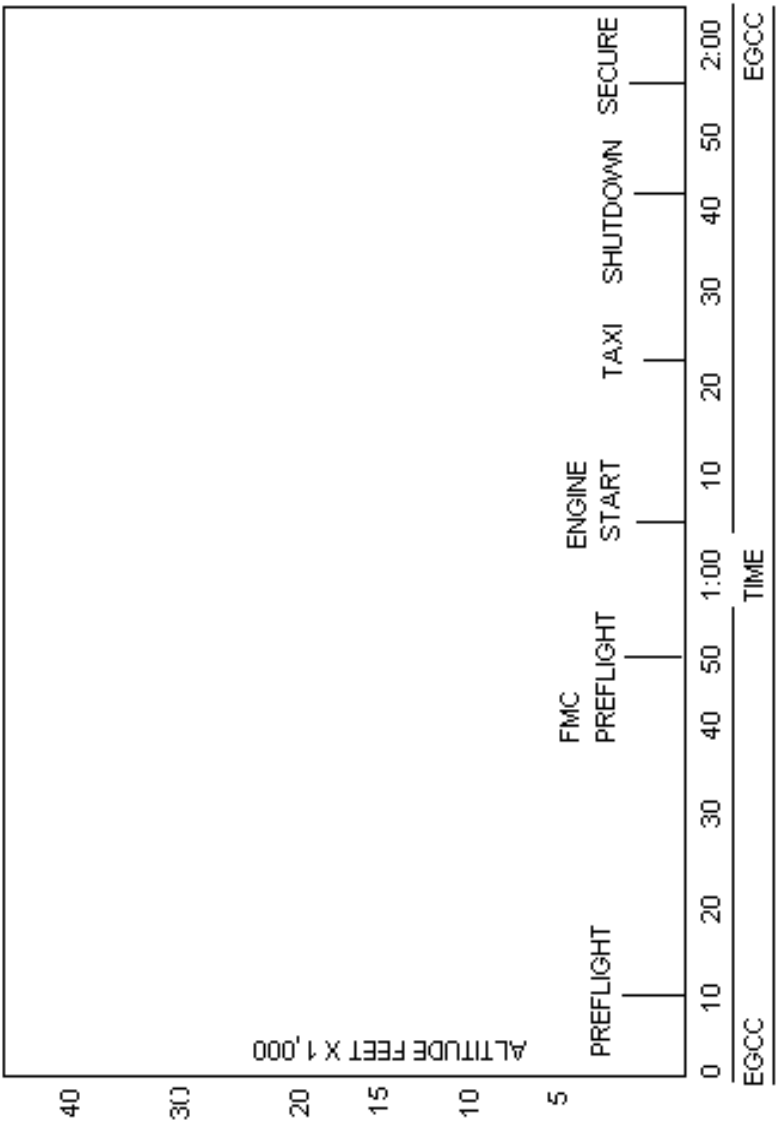
GR WT	197,000 KGS	FLAPS	15
FUEL	20,000 KGS	CG	23%
ZFW	177,000 KGS	WIND	Calm
RESERVES	5,500 KGS	SLOPE	0
CRZ ALT	9,000’	EO ACCEL HT	1,000′
COST INDEX	180	ACCEL HT	3,000′
THRUST LIM	T/OFF THRUST	THR REDUCTION	1,000′

WEATHER

EGCC Wind calm Visibility 15 Km Sky clear Temperature 15° C / Dew Point 08° C Altimeter 1013 Mb ILS RWY 23 R in use. Landing and departing RWY 23 R.

ATIS ARRIVAL 128.17, ATIS DEPARTURE 121.97

PROFILE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PREFLIGHT
FMC PREFLIGHT
ENGINE START
TAXI
SHUTDOWN
SECURE
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EGCC
TIME
EGCC

PREFLIGHT	**REFERENCE**
Introduce scan flow patterns	FCOM NP.21
Procedural tasks follow a phase of flight order and logical scan Flow pattern Introduce crew duty orientation	FCOM NP.21
The "area of responsibility" concept is used.	
Introduce Normal Procedures philosophy	FCOM NP.21
Airplane condition is acceptable, and the flight deck is correctly Configured for each phase of flight. Procedures are performed from recall and follow a panel flow. System status is verified before engine start by discrete lights and **EICAS:** after engine start by **EICAS** only.	
Checklists are performed after the normal procedures and contain only items relating to safety of flight.	
CDU manipulations are normally performed by the **PM** or **F/O** and verified by the **PF** or **CAPT.**	
During autopilot operations, **MCP** manipulations are normally Performed by the **PF**. During autopilot off operations **MCP** Manipulations are normally performed by the **PM** at the request of the **PF**.	
Introduce Display Select Panel (**DSP)**	FCOM
Selection of the 3 **MFD**s	
CANC/RCL switch	FCTM
Synoptic display philosophy.	FCOM NP.21
Introduce **FMC** Preflight procedures	FCOM NP.21
Company route entry	
The crew is not responsible for **FMC** preflight entries on this flight. Introduce	
Electronic checklist (ECL) instructions in QRH	FCOM10/ Checklist Organized by phase of flight

The **PM** selects and manipulates the checklist.
Verification and responses are made by the pilot who Accomplished the item (area of responsibility)
Calling up and putting away the **ECL.**

ECL Features:
Many system switch/control positions are sensed (closed loop).

Checklist closed loop (sensed) steps are continuously evaluated in real time for condition.
Gathers notes for easy review.
Deferred items are automatically appended to the appropriate Normal checklist.
ECL can be controlled by either pilot.
Indication of who is in control on the CCD.
ECL colors.
Checklist complete prompt.

ENGINE START	**REFERENCE**
Normal Procedures	FCOM NP.21
Before start procedures	FCOM NP.21
FMC before start procedures	FCOM NP.21,11.40

The crew is not responsible for **FMC** entries on this flight.

After Start procedures	FCOM NP.21

TAXI-OUT	
Normal Procedures	FCOM NP.21

Flaps 15 take off.
Taxi is simulated since the FBS has no visual system.

TAKE OFF	
Normal Procedures	FCOM NP.21

No take off will be accomplished on this flight,
Instead emphasis is on normal procedures.

TAXI-IN	**REFERENCE**
Normal Procedures	FCOM NP.21

SHUTDOWN	**REFERENCE**
Normal Procedures	FCOM NP.21

SECURE	**REFERENCE**
Normal Procedures	FCOM NP.21

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DAY SUMMARY

This Day is a local flight originating from and returning to Manchester (EGCC). It continues to practice normal preflight and post flight procedures. The Day introduces auto flight use, flight instrument interpretation, and systems management. In addition, in-flight procedures are introduced and practiced including a flight director takeoff and automatic landing. Emphasis will be on FMS preflight entries, auto flight modes, and electronic flight instrument interpretation

DAY OBJECTIVES

- Perform normal procedures.
- Integrate FMS tasks during normal operation.
- Interpret EFIS displays.
- Integrate systems management tasks during normal procedures.

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ROUTE OF FLIGHT

ORIGIN	MANCHESTER (EGCC) Gate ---------- RWY 23R
ROUTE	KUXEM DIRECT KEPAD *L15* HON P155 EBOTO *UN*601 LESTA
DEPARTURE	KUXEM ONE ROMEO (KUXE 1R)
DESTINATION	MANCHESTER (EGCC)
FLIGHT NUMBER	PIA 777

PERFORMANCE

GRWT	197,000 KGS	FLAPS	15
FUEL	20,000 KGS	CG	23%
ZFW	177,000 KGS	WIND	230/15
RESERVES	5,500 KGS	SLOPE	0
CRZ ALT	9,000’	EO ACCEL HT	1,000′
COST INDEX	180	ACCEL HT	3,000
THRUST LIM	T/OFF THRUST	THR REDUCTION	Flaps 5′

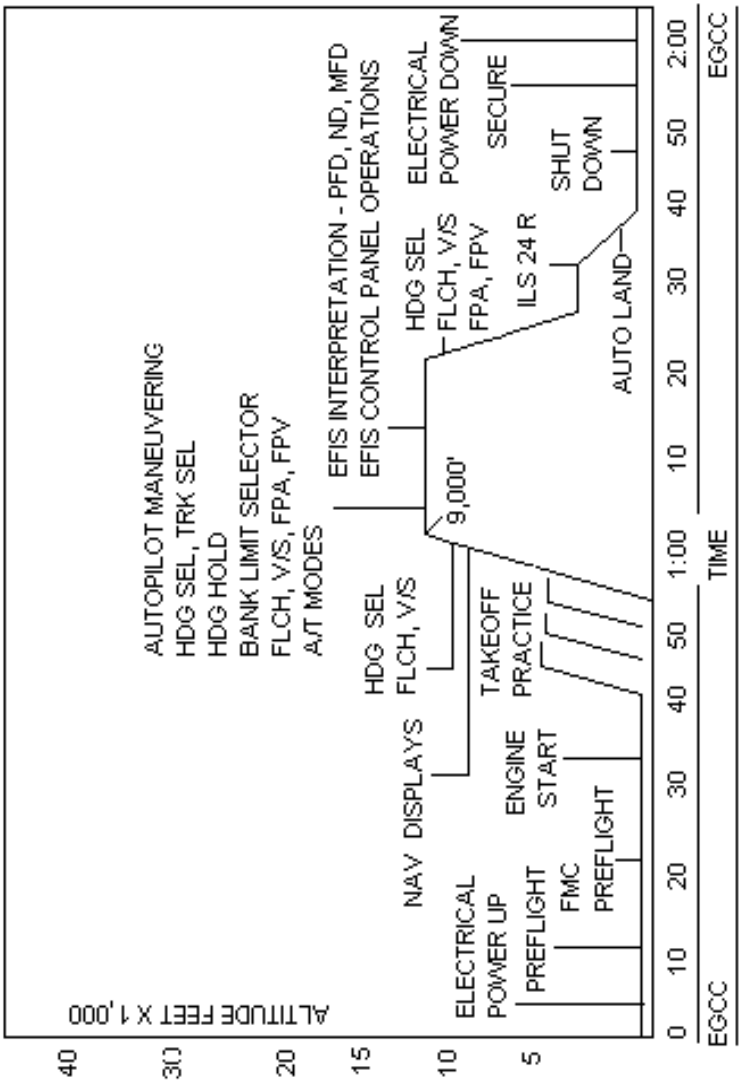
WEATHER

EGCC Wind 230/15 Visibility 15 Km Sky clears Temperature 15C / Dew Point 08 C Altimeter 1012 mb ILS RWY 23 R / Landing and departing RWY 23 R

CLEARANCE

Pakistan 777 is cleared to London Heathrow KUXEM ONE ROMEO (KUXE 1R) departure. Departure frequency 134.42. Squawk 4777.

PROFILE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EGCC
TIME
EGCC
ELECTRICAL POWER UP
PREFLIGHT
FMC PREFLIGHT
NAV DISPLAYS
ENGINE START
HDG SEL
FLCH, V/S
TAKEOFF PRACTICE
9,000'
AUTOPILOT MANEUVERING
HDG SEL, TRK SEL
HDG HOLD
BANK LIMIT SELECTOR
FLCH, V/S, FPA, FPV
A/T MODES
EFIS INTERPRETATION - PFD, ND, MFD
EFIS CONTROL PANEL OPERATIONS
HDG SEL
FLCH, V/S
FPA, FPV
ILS 24 R
AUTO LAND
SHUT DOWN
ELECTRICAL POWER DOWN
SECURE

PRE FLIGHT	**REFERENCE**
Electrical Power up Procedure	FCOM SP.6
Normal procedures	FCOM NP 21
FMC Preflight procedures	FCOM NP 21
Company Route entry	

ENGINE START	**REFERENCE**
Normal procedures	FCOM NP 21
Before start procedure	FCOM NP 21
FMC before Start procedures	FCOM NP.21
After start procedures	FCOM NP 21

TAXI OUT	**REFERENCE**
Normal procedures	FCOM NP 21
Flaps 15 take off	FCTM

TAKEOFF	**REFERENCE**
Normal procedures	FCOM NP 21, FCOM
Two take offs from each seat – use LNAV/VNAV on One and HDG SEL/FLCH on the other from each seat	FCOM NP 21
Review flap retraction schedule	FCTM
Perform additional practice take offs as desired	

CLIMB	**REFERENCE**
Normal procedures	FCOM NP 21
FMC operations	FCOM 11.31
Interpret navigation displays (NDs)	FCOM 10
Heading control	FCOM SP4
Perform Turns – use HDG SEL	
Review indications on the PFD, FMA and ND – HDG SEL	
Altitude Control	
Perform climb and review indications on the PFD and FMA –FLCH, VS	

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CRUISE	**REFERENCE**
Normal procedures	FCOM NP
FMC Operations	FCOM 10.31
Autopilot Maneuvering	FCOM SP4
Practice maneuvering the airplane using the Various integrated autopilot modes.	
Heading Control	FCOM SP4
Practice using autopilot heading control – HDG SEL, TRK SEL, Use HDG HOLD, TRK HOLD	
Discuss Bank Limit Selector	
Altitude control	
Practice using autopilot altitude control–FLCH, V/S, FPA, FPV.	
Practice climb/descent	FCOM SP4
Thrust Control	FCOM SP4
Review auto throttle modes	
A/T modes: SPD (V/S), THR (FLCH SPD), and FMAs.	
Autopilot engage/disconnect	FCOM 4
Discuss A/P & A/T engage, disconnect control	
Flight Director	FCOM 4
Review flight director display	
EFIS interpretation	FCOM 10
Review the various displays, symbology, and Colors on the PFD, ND, MFD.	
EFIS Control Panel	FCOM 10
Normal Operations	
Practice normal operations of the EFIS controls.	
Alternate operation	
Practice CDU control of the EFIS control panel.	

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	REFERENCE
Arrival Procedures (ARR – *LESTA1M*)	FCOM SP & 11
Review arrival procedure (ILS runway 23 R) at Manchester (EGCC) – ARRIVALS page	
APPROACH REF Page – Flaps 30 landing	
Enter flap position and VREF speed for landing	

DESCENT	**REFERENCE**
Normal procedure	FCOM NP
FMC operations	FCOM 11
Heading Control	FCOM SP4
Practice using the heading select function during Descent – HDG SEL	
Altitude Control	
Practice using autopilot descent control as desired	FCOM SP4
FLCH, V/S, FPA, FPV	

APPROACH	**REFERENCE**
Normal Procedures	FCOM NP 21
Review the Flap speed schedule	FCTM
ILS approach (Radar Vector if required)	FCOM NP21
Approach mode	FCOM NP 21
Perform an automatic approach	
Introduce FMA annunciations.	

LANDING	**REFERENCE**
Normal Procedures	FCOM NP 21
Automatic Landing	FCOM 4.20.13

TAXI IN	
Normal Procedure	FCOM NP 21

SHUT DOWN	**REFERENCE**
Normal Procedure	FCOM NP 21

SECURE	
Normal Procedures	FCOM NP 21
Electrical Power down Procedure	FCOM SP.6

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DAY SUMMARY

This Day is a flight from Manchester (EGCC) to London Heathrow (EGLL). The Day practices normal procedures and display management. Crew uses the auto flight system to perform takeoff and control the airplane throughout the flight. LNAV is introduced. Emphasis will be on autopilot pitch modes to control climb and descent, autopilot roll modes to control heading and track, and the CDU to program the active route and update clearance changes in the FMS during the flight. Navigation mode practice and map interpretation are important accomplishments of the Day

DAY OBJECTIVES

- Perform normal procedures.
- Integrate FMS tasks during normal operation.
- Interpret Display Select Panel (DSP) displays.
- Integrate systems management tasks during normal procedures.

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ROUTE OF FLIGHT

ORIGIN	MANCHESTER (EGCC) Gate ---------- RWY 23R
ROUTE	NON STANDARD AIRWAY CLEARANCE
DEPARTURE	*EGCC LISTO2R LISTOL612 HON HON1H EGCC*
DESTINATION	London Heathrow (EGLL)
ALTERNATE	Birmingham (EGBB)
FLIGHT NUMBER	PIA 777

PERFORMANCE

GRWT	230,000 KGS	FLAPS	20
FUEL	20,000 KGS	CG	24%
ZFW	210,000 KGS	WIND	220/20
RESERVES	5,500 KGS	SLOPE	0
CRZ ALT	17,000’	EO ACCEL HT	1,000′
COST INDEX	180	ACCEL HT	3,000′
THRUST LIM	T/OFF THRUST	THR REDUCTION	1000

WEATHER

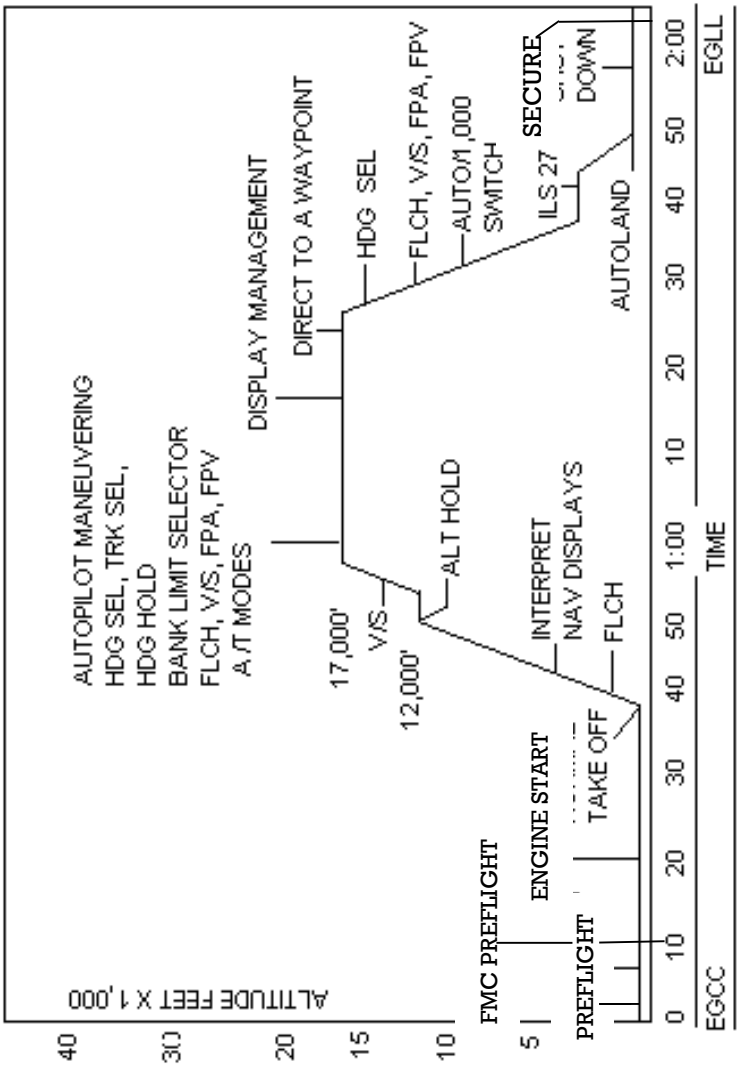
EGCC Wind 220/20 Visibility 15 km Sky clear Temperature 10C Dew Point 06 C Altimeter 1014 Mb ILS RWY 23 R

EGLL Wind 330 / 15 Visibility 7 km Ceiling 3,000 Broken Temperature 23 C Dew Point 16 C Altimeter 1016 Mb ILS RWY 27 R

CLEARANCE

Pakistan 777 is cleared to London Heathrow *LISTO2R*. DEP frequency 128.05. Squawk 4777.

PROFILE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EGCC
TIME
EGLL
PREFLIGHT
FMC PREFLIGHT
ENGINE START
TAKE OFF
FLCH
INTERPRET
NAV DISPLAYS
ALT HOLD
V/S
17,000'
12,000'
AUTOPILOT MANEUVERING
HDG SEL, TRK SEL,
HDG HOLD
BANK LIMIT SELECTOR
FLCH, V/S, FPA, FPV
A/T MODES
DISPLAY MANAGEMENT
DIRECT TO A WAYPOINT
HDG SEL
FLCH, V/S, FPA, FPV
AUTO/1,000
SWITCH
ILS 27
AUTOLAND
SECURE
DOWN

PRE FLIGHT	**REFERENCE**
Normal procedures	FCOM NP.21
Introduce Radio Tuning – Audio control	FCOM
Introduce Audio Control	
FMC Pre-Flight Procedures	FCOM NP. 21,
Manual route entry	FCOM 11.40
Route: *LISTO L612 HON*	
Dep: *LISTO TWO ROMEO (LIST O 2R)*	
Select desired waypoint	FCOM 11.40
Navigation Display Plan Mode	FCOM 11.40
ATIS 121.97, DELIVERY (CPT) 121.7, GROUND 121.85,TWR 118.62	

ENGINE START	**REFERENCE**
Normal Procedures	FCOM NP 21
Before Start procedure	FCOM NP 21
FMC before Start procedures	FCOM NP.21, 11.40
After Start Procedures	FCOM NP 21

TAXI OUT	**REFERENCE**
Normal Procedures	FCOM NP 21
Flaps 20 Take Off	

TAKE OFF	**REFERENCE**
Normal Procedures	FCOM NP 21
Use LNAV and VNAV for Take off	

CLIMB	**REFERENCE**
Normal Procedures	FCOM NP 21
FMC Operations	FCOM 11
Interpret navigations Display	FCOM 10
Altitude Control	
Climb FL170 with FLCH mode	FCOM SP4
Intermediate level off at FL 120 use ALT HOLD	
Climb to FL 170 use V/S	

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CRUISE	**REFERENCE**
Normal Procedures	FCOM NP.21
FMC Operations	FCOM 11
Autopilot Maneuvering	FCOM SP4
Practice maneuvering the airplane using the Various integrated autopilot modes, as necessary	
Heading Control	FCOM SP4
Practice using autopilot heading controls HDG SEL, TRK SEL, HDG HOLD, TRK HOLD Bank Limit selector	
Altitude Control	FCOM SP4
Practice Autopilot altitude Controls (Pitch Mode) FLCH, V/S, FPA, FPV	
Thrust Control	FCOM SP4
Review auto throttle modes Discuss modes – SPD (V/S), THR (FLCH SPD) and FMAs	
Display Management	FCOM 10
Normal Operations Discuss – inboard display selectors Display select panel (DSP)	
Alternate Operations	
Practice CDU control of the display Select panel (DSP)	
Direct to a waypoint	
After DOBEM cleared direct KENET - LEGS page	FCOM 11
Arrival procedure (ARR …. OCK 1A)	FCOM 11
Enter arrival procedure ILS 27 R at EGLL Enter flap position and VREF speed – APPROACH REF. PAGE	
ATIS - 115.1 NAV RADIO	

DESCENT	
Normal procedures	FCOM NP. 21
FMC operations	FCOM 11
Heading Control	FCOM SP4
Practice using heading select during descent HDG SEL	
Altitude Control	
Practice using autopilot descent controls as desired FLCH, V/S, FPA, FPV	

REFERENCE

AUTO/1000 switch
From OCK proceed direct to BIGGIN (BIG)

APPROACH

Normal Procedures FCOM NO 21, NP
Review the Flap Speeds schedule FCTM
After BIGGIN turn left heading 335' – HDG SEL
Radar vectors to ILS RWY 27 R (LHR)
INTC CRS TO FAF (273 deg) – LEGS page
TWR…… GND……
ILS Approach
ILS runway 27 R approach at LHR (EGLL)
Display an extended approach course to the final approach
Fix (INTC CRS TO FAF) – LEGS page (D4.0 IRR) FCOM 11
Approach mode FCOM 11
Perform automatic landing
Review FMA annunciations

LANDING

Normal Procedures FCOM NP 21
Automatic Landing FCOM 4

TAXI IN

Normal Procedures FCOM NP 21

SHUT DOWN

Normal Procedures FCOM NP 21

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DAY SUMMARY

This Day is a night flight from Manchester (EGCC) to London Heathrow (EGLL). VNAV is introduced. During the flight, LNAV and VNAV will be used as the primary automatic flight modes; however, HDG SEL and FLCH may be used as required. The CDU is used to program the active route and update clearance changes in the FMS during the flight. Holding is introduced and practiced.

Thrust limit and flap setting has to be calculated through TOGW analysis chart and inserted in FMS for optimum performance. The method is given in the SOP.

DAY OBJECTIVES

- Perform normal procedures.
- Perform integrated FMS tasks.
- Maintain airplane control and navigation using the autopilot and CDU.
- Perform systems management tasks.

ROUTE OF FLIGHT

ORIGIN	Manchester (EGCC) Gate …… Rwy 05L
ROUTE	*LISTO DCT L612 HON1H*
DEPARTURE	LISTO TWO SIERRA (LISTO 2S)
DESTINATION	London Heathrow (EGLL)
ALTERNATE	EGBB
FLIGHT NUMBER	PIA777

PERFORMANCE

GRWT	240,000 KGS	FLAPS	OPT
FUEL	30,000 KGS	CG	24%
ZFW	210,000 KGS	WIND	Calm
RESERVES	5,500 KGS	SLOPE	0
CRZ ALT	17,000’	EO ACCEL HT	1,000′
COST INDEX	180	ACCEL HT	3,000
THRUST LIM	TO 1	THR REDUCTION	Flap 5

WEATHER

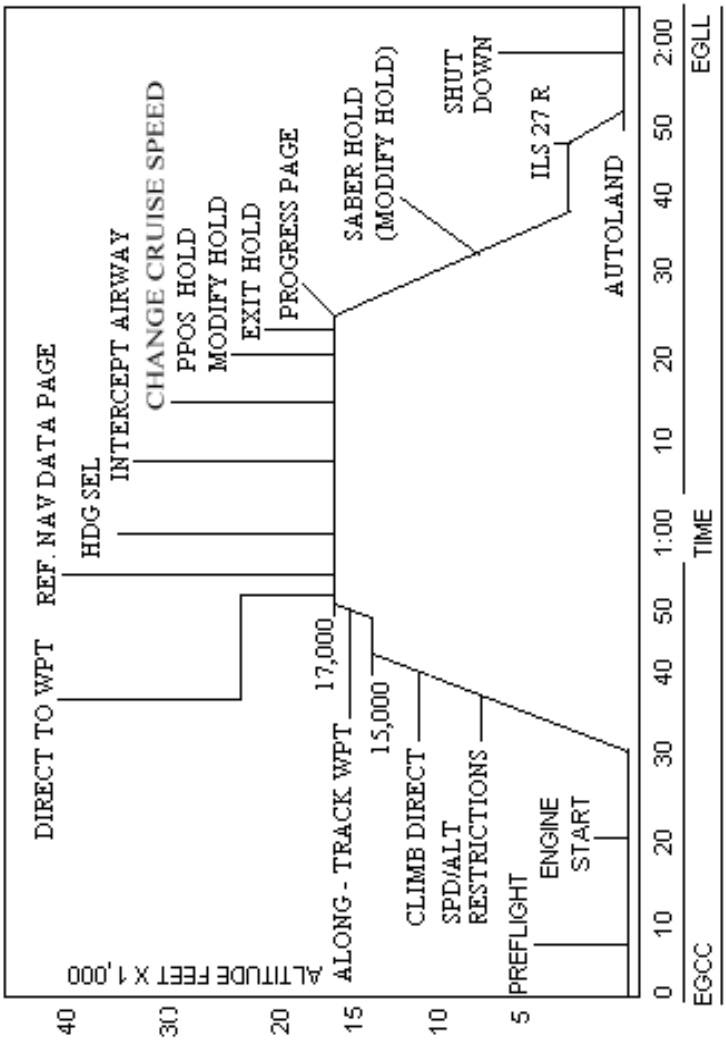
EGCC Wind calm Visibility 15 km Sky clear Temperature 15C Dew Point 06C Altimeter 1013 Mb ILS RWY 05 L.

EGLL Wind 270/15 Visibility 10 km Sky clear Temperature 19C / Dew Point 13C Altimeter 1012 Mb ILS RWY 27 R.

CLEARANCE

Pakistan777 is cleared to LONDON Heathrow LISTO 2S departure. LISTO proceed DIRECT TELBA. Departure frequency *121.705* Squawk 4455.

PROFILE


DIRECT TO WPT
REF. NAV DATA PAGE
HDG SEL
INTERCEPT AIRWAY
CHANGE CRUISE SPEED
PPOS HOLD
MODIFY HOLD
EXIT HOLD
PROGRESS PAGE
SABER HOLD
(MODIFY HOLD)
SHUT
DOWN
ILS 27 R
AUTOLAND
17,000
15,000
ALONG - TRACK WPT
CLIMB DIRECT
SPD/ALT
RESTRICTIONS
PREFLIGHT
ENGINE
START
ALTITUDE FEET X 1,000
40
30
20
15
10
5
0
10
20
30
40
50
1:00
10
20
30
40
50
2:00
TIME
EGCC
EGLL

PRE FLIGHT	**REFERENCE**
Normal Procedures	FCOM NP.21
FMC Preflight Procedures	FCOM NP.21
Manual route entry	
Route: *LISTO L612 HON*	
Departure: LISTO TWO SIERRA (LISTO 2S)	
FREQ: ATIS – 121.*98*, CPT – *121.705*, GND - *121.855*	
TWR – *118.63*, DEP – *121.705*	

ENGINE START	
Normal Procedures	FCOM NP.21
Before Start Procedures	FCOM NP.21
FMC before Start Procedures	FCOM NP.21,
After Start Procedures (Before Taxi)	FCOM NP.21

TAXI-OUT	
Normal procedures	FCOM NP.21
Flaps 15 or 5 take off	

TAKE OFF	
Normal Procedures	FCOM NO.21,
Use LNAV and VNAV for take off	

CLIMB	
Normal Procedures	FCOM NP.21
FMC Operations	FCOM 11
Revised Route LISTO DIRECT HON	
(Or PRESENT POSITION DIRECT TO HON)	
L10 *BPK Q295 BRAIN P44 CLN DIRECT TRIPO DIRECT LAM.*	
Enter speed/altitude Restriction	FCOM 11
CROSS HON at or below FL 200 and	
280 knots – 280/200B on LEGS page.	

REFERENCE

Climb Direct
After HON resume normal climb speed and climb FCOM 11
FL270 discuss MCP (ALT intervention)
and FMC (CLB DIR)
Along-Track waypoint
Report 10 miles short of BPK (BPK/-10 on LEGS page) FCOM 11

CRUISE

Normal procedures FCOM NP.21
FMC operations FCOM
Heading Control
From HON, Turn to heading 090' –HDG SEL
Intercept airways
On heading 090 Intercept *UY250* (to) DTY. (RTE page)
Inhibit Navigation aid
HON VOR/DME is unreliable – do not use for navigation
REF NAV DATA page
Change cruise speed
Reduce speed to 280 knots for spacing
VNAV CRZ page FCOM
Resume normal speed VNAV CRZ page
Present position HOLD
Hold present position HOLD page FCOM 11.42
Direct to a waypoint
After CLN/-5 turn right direct TRIPO FCOM 11.42
Arrival procedure
Expect ILS runway 27 R at London (EGLL) FCOM 11.42
LAMBOURNE THREE ALFA (LAM 3A)
Amend missed approach procedure and maintain 5000
Review T/D point and deceleration point
Determine ETA, fuel remaining
Determine arrival ETA, and fuel remaining for London
and Alternate airport – Progress page
Modify Hold
Hold at position SABER FL70 and Modify Hold
to NON STD
Exit hold
Depart SABER holding on Course to LAM VOR FCOM 11.42

DESCENT	**REFERENCE**
Normal Procedures	FCOM NP.21
FMC Operations	FCOM 11.31
Descend and maintain 4,000 at pilot's discretion	
APPROACH	
Normal Procedures	FCOM NP.21,
ILS Approach	FCOM NP.21
Leave LAM, heading –HDG SEL	
Radar vector to ILS RWY 27 R (EGLL)	
Display an extended approach course to the final	
Approach fix (CF 27R INTC) – ARRIVAL page	FCOM 11
TWR – 118.7 GND - 121.9	
LANDING	
Normal Procedures	FCOM NP.21
Automatic Landing	FCOM
TAXI-IN	
Normal Procedures	FCOM NP.21
SHUT DOWN	
Normal Procedures	FCOM NP.21

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DAY SUMMARY

This Day continues to practice clearance changes during a flight in icing conditions from Manchester (EGCC) to Birmingham (EGBB). LNAV and VNAV continue to be used as the primary automatic flight modes. During the flight, HDG SEL and FLCH may be used as required.

Thrust limit and flap setting has to be calculated through TOGW analysis chart and inserted in FMS for optimum performance. The method is given in the SOP.

DAY OBJECTIVES

- Perform normal procedures.
- Perform integrated FMS tasks.
- Maintain airplane control and navigation using the auto flight system.
- Perform systems management tasks.

ROUTE OF FLIGHT *POL5R POL. POL1B EGBB*

ORIGIN Manchester (EGCC)
Gate ----------
RWY 23 R

ROUTE *POL5R POL. POL1B EGBB*

DEPARTURE *POL5R*

DESTINATION Birmingham (EGBB)

ALTERNATE London Heathrow (EGLL)

FLIGHT NUMBER PIA 777

PERFORMANCE

GRWT	240,000 KGS	FLAPS	OPT
FUEL	20,000 KGS	CG	24%
ZFW	220,0OO KGS	WIND	Calm
RESERVES	7,574 KGS	SLOPE	0
CRZ ALT	FL 190	EO ACCEL HT	1,000′
COST INDEX	180	ACCEL HT	3,000
THRUST LIM	TO 2	THR REDUCTION	1,000′

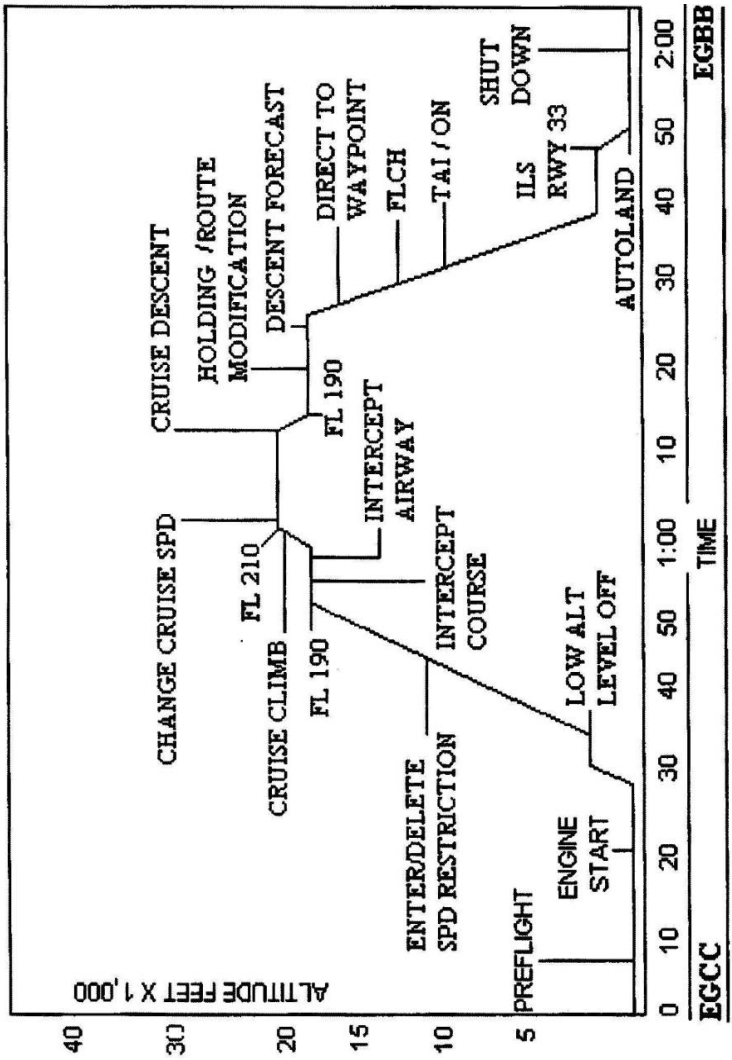
WEATHER

EGCC Wind calm Visibility 1500m Sleet Ceiling 800 Overcast Temperature 0C Dew Point -2C Altimeter 1009 Mb ILS RWY 23 R

EGBB Wind 330/15 kts Visibility 3000m Rain Ceiling 3000 Broken Temperature 15C Dew Point I0 C Altimeter 1008 Mb ILS RWY 33.

CLEARANCE Pakistan777 cleared to Birmingham *POL5R* Departure, Squawk 4464, departure frequency 128.05

PROFILE


ALTITUDE FEET X 1,000
40
30
20
15
10
5
PREFLIGHT
ENGINE START
ENTER/DELETE SPD RESTRICTION
CRUISE CLIMB
FL 190
CHANGE CRUISE SPD
FL 210
CRUISE DESCENT
INTERCEPT COURSE
INTERCEPT AIRWAY
FL 190
HOLDING /ROUTE MODIFICATION
DESCENT FORECAST
LOW ALT LEVEL OFF
DIRECT TO WAYPOINT
FLCH
TAI / ON
ILS RWY 33
AUTOLAND
SHUT DOWN
0
10
20
30
40
50
1:00
10
20
30
40
50
2:00
TIME
EGCC
EGBB

PRE-FLIGHT	**REFERENCE**
Normal Procedures	FCOM NP.21
FMC Pre-flight Procedures	FCOM NP.21,
Manual entry	FCOM
ROUTE: *EGCC POL5R POL. POLIB EGBB*	
DEPARTURE: *POL5R*	
ENGINE START	
Normal Procedures	FCOM NP.21
Before Start Procedures	FCOM NP.21
FMC before start procedures	FCOM NP.21
After Start Procedures (Before Taxi)	FCOM NP.21
Engine Anti-Ice Required	FCOM SP.3
TAXI OUT	
Normal Procedures	FCOM NP.21
Flaps 5 or 15 Take Off	
TAKE OFF	
Normal Procedures	FCOM NP.21,
Use LNAV and VNAV for take off	FCOM 11.41 & 4.20
CLIMB	
Normal Procedures	FCOM NO.21
FMC Operations	FCOM 11.31
Low altitude level off	
Maintain 2,000 feet – altitude selector	
Enter/Delete Speed restriction	FCTM 4.2
Passing 3000 Maintain 230 knots for traffic Separation	
Delete at 4,000 and climb to 5,000 feet	
IAS/MACH SELECTOR (speed intervention)	
Climb Direct – Resume normal climb speed.	
Direct to a waypoint	
From POL proceed direct DCS L612 GOW	

CRUISE	**REFERENCE**
Normal Procedures	FCOM NP 21
FMC Operations	FCOM 11.31
Cruise Climb	
Climb and maintain FL 210	
Change Cruise Speed	
Reduce speed to 290 knots, resume normal speed after reaching 290 knots (speed intervention).	
Cruise Descent	
Descent to FL 190 (Altitude Selector)	
Holding	
Hold at CHASE INBOUND 151° MAX ALT 5000' – Hold page	
Arrival procedure	
Expect ILS runway 33 approach *POL1B EGBB*	
TAI/ON altitude	
Moderate icing is reported surface to 10,000 feet DESCENT FORECAST page use	

DESCENT	**REFERENCE**
Normal Procedures	FCOM NP. 21
FMC Operations	FCOM 11.31
Change descent speed	
Enter/Delete speed/Altitude Restrictions	
Altitude control	
Descent to 3,000 feet FLCH	

APPROACH	**REFERENCE**
Normal Procedures	FCOM NP.21
ILS Approach	FCOM NP. 21,
Radar Vector for RWY 33	

LANDING	
Normal Approach	FCOM NP.21
Automatic Landing	FCOM NP.21

TAXI-IN	**REFERENCE**
Normal Procedures	FCOM NP.21
SHUT DOWN	
Normal Procedures	FCOM NP.21
SECURE	
Normal Procedures	FCOM NP.21

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DAY SUMMARY

This Day is a flight from Manchester (EGCC) to Amsterdam (EHAM); Route modifications are made as the flight progresses. Non-normal procedures are introduced. Emphasis will be on engine start and electrical system, smoke and smoke removal, and electronic flight instrument non-normal procedures which are introduced and practiced throughout the flight. A go-around is introduced at Amsterdam followed by radar vectors.

Thrust limit and flap setting has to be calculated through TOGW analysis chart and inserted in FMS for optimum performance. The method is given in the SOP.

DAY OBJECTIVES

- Perform integrated FMS tasks.
- Apply Crew Resource Management (CRM) attributes while practicing elected Normal and non-normal procedures.
- Maintain airplane control and navigation throughout the flight using the FMS Auto-flight system.
- Perform systems management tasks.
- *Demonstrate required level of proficiency in preflight and Post-flight normal Procedures.
- *Demonstrate required level of familiarity performing appropriate engine start, Electrical system, smoke and smoke removal, and EFIS non-normal procedures.

(*) Denotes proficiency items

ROUTE OF FLIGHT

ORIGIN	MANCHESTER (EGCC) Gate ---------- RW 23R
ROUTE	*EGCC POL5R POL DCT DESIG L603 LAMSO LAMSO2A EHAM*
DEPARTURE	*POL5R*
DESTINATION	AMSTERDAM (EHAM)
FLIGHT NUMBER	PIA777

PERFORMANCE

GRWT	230,000 KGS	FLAPS	OPT
FUEL	30,000 KGS	CG	23%
ZFW	200,000 KGS	WIND	320/ 12
RESERVES	5,400 KGS	SLOPE	0
CRZ ALT	FL 250	EO ACCEL HT	1,000′
COST INDEX	180	ACCEL HT	3,000
THRUST LIM	AS REQUIRED	THR REDUCTION	Flaps 5

CRZ WIND at DTY	FL170	31025
	FL210	33035
	FL250	35045

WEATHER

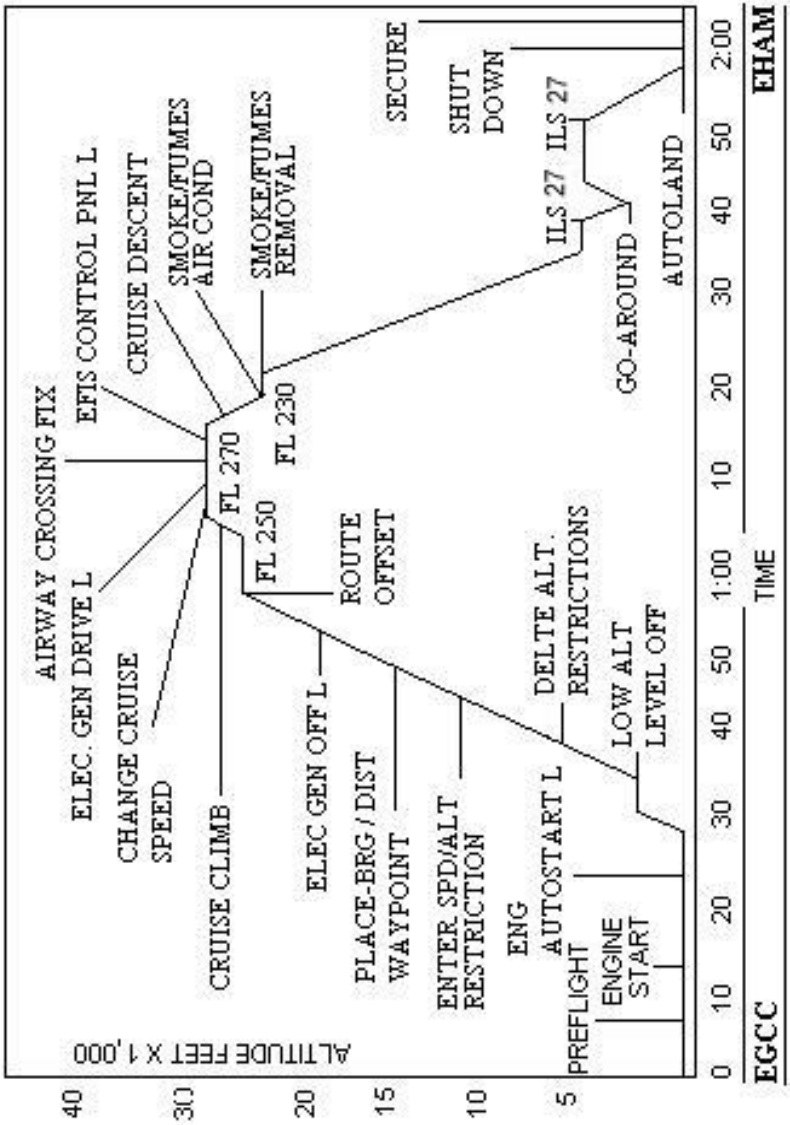
EGCC Wind 320/12 Visibility 15 km Ceiling BKN 2500 Temperature 13C / Dew Point 8 C Altimeter 1014 Mb ILS RWY 23 R.

EHAM Wind 200/15 Visibility 12 km SCT 1800 Temperature 28C Dew Point 21 C Altimeter 1016 Mb.

CLEARANCE

Pakistan777 is cleared to Amsterdam, POL5R ONE ROMEO Departure Frequency 134.42, squawk 4316.

PROFILE


AIRWAY CROSSING FIX
EFIS CONTROL PNL L
CRUISE DESCENT
SMOKE/FUMES AIR COND
SMOKE/FUMES REMOVAL
SECURE
SHUT DOWN
ILS 27
ILS 27
AUTOLAND
GO-AROUND
FL 230
FL 270
FL 250
ROUTE OFFSET
ELEC. GEN DRIVE L
CHANGE CRUISE SPEED
CRUISE CLIMB
ELEC GEN OFF L
PLACE-BRG / DIST WAYPOINT
ENTER SPD/ALT RESTRICTION
ENG AUTOSTART L
DELTE ALT. RESTRICTIONS
LOW ALT LEVEL OFF
PREFLIGHT
ENGINE START
ALTITUDE FEET X 1,000
40
30
20
15
10
5
0
10
20
30
40
50
1:00
10
20
30
40
50
2:00
EGCC
TIME
EHAM

PRE FLIGHT	**REFERENCE**
* Normal Procedures	FCOM NP.21
* FMC Pre-Flight Procedures	FCOM NP.21,
Clearance: *POL5R*	
Wind Data Entry	FCTM, FCOM 11
Thrust Limit as required	FCOM
Enter or check Climb 1	
THRUST LIMIT PAGE	
ENGINE START	
* Normal Procedures	FCOM NP.21
* Before Start Procedures	FCOM NP.21
* FMC before Start procedures	FCOM NP.21
Introduce Non-normal ECL Procedures	FCOM
* ENG. AUTO START L	QRH 7.3
* After Start Procedures	FCOM NP.21
(Reset when completed)	
TAXI OUT	
Normal Procedures	FCOM NP.21
Flaps 05 OR 15Take off	FCTM
Runway Change to 05 L	
Departure (SID) Changed to *DESIGIS*	
EGCC DESIGIS DESIG L 603 LAMSO LAMSO2A EHAM	
TAKE OFF	
Normal Procedures	FCOM NP.21
Use LNAV and VNAV for Take off	

CLIMB	**REFERENCE**
Normal Procedures	FCOM NP.21
FMC Operations	FCTM
Low Altitude level off	
Maintain 2500 feet – Altitude selector	
Delete altitude restriction	
Cancel all altitude restrictions, climb and maintain FL 250 altitude selectors (altitude instructions) or FMC (Climb Direct)	
Enter speed/altitude restrictions	FCOM 11.31
Maintain 230 knots for traffic separation until Reaching 10,000 feet on VNAV CLB page	
Place bearing/Distance way point	FCOM 11.42
POL direct DESIG radial 080/15 (DES01).	
From that point turn right HDG 180 intercept L603 to LAMSO.	
ELEC GEN OFF L	QRH 6.5
(Reset when complete)	

CRUISE

Normal Procedures	FCOM NP.21
FMC Operations	FCOM 11.31
Route Offset	
Offset 15 Miles (L 15) north of present route RTE page	
Proceed direct to *LAMSO LAMS2A* Arrival Amsterdam	
Cruise Climb	
Climb and maintain FL 270 – Altitude selector	
Change Cruise Speed	
After the cruise climb reduce speed to 290 knots for spacing - IAS/MACH selector. (Speed Intervention)	
Resume normal speed	

REFERENCE

Route Modification/airways crossing fix
After *LAMSO turn R HDG150 intercept L620 TULIP Y12*
SPY (SPIJKERBOOR) Expect radar vectors
ELEC GEN DRIVE L — QRH 6.4
EFIS control Panel — QRH & FCOM 10.10
(Reset when completed)

CRM consideration.
Crew member Training and Development
Build team skills
Discuss system capabilities and options
Review options to reinforce crew understanding

Cruise Descent
Descend and maintain FL 230 – Alt selector
ATIS 108.4/132.97
SMOKE/FUMES AIR COND — QRH 8.6
CRM Considerations
Captain's Authority
Manage and direct crew actions
Exercise emergency authority
Assign duties and responsibilities
Direct crew and get feedback
SMOKE/FUMES REMOVAL — QRH 8.24

DESCENT

Normal Procedures — FCOM NP.21
Descent and maintain FL 100
FMC Operations — FCOM 11.31

APPROACH

Normal Procedures — FCOM NP.21
Descent and maintain FL70 - proceed direct to — FCOM NP.21
SPL and cleared for ILS Approach RWY 27

GO-AROUND	**REFERENCE**
Normal Procedures	FCOM NP.21
Go ground	FCOM NP.21
Climb on track 269' to 2000 ATC	
APPROACH	
Normal Procedures	FCOM NP.21
ILS Approach	FCOM NP.21
Radar Vector to ILS 27 – SCHIPHOL (WP) intc	
LANDING	
Normal Procedures	FCOM NP.21
Automatic Landing	FCOM
TAXI IN	
Normal Procedures	FCOM NP.21
SHUT DOWN	
Normal Procedures	FCOM NP.21
SECURE	
Normal Procedures	FCOM NP.21

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DAY SUMMARY

This Day is a flight from Amsterdam (EHAM) to Manchester (EGCC). The crew continues to integrate and practice FMS tasks. Emphasis will be on air systems, engine, APU, passenger evacuation, and fire non-normal procedures.

Thrust limit and flap setting has to be calculated through TOGW analysis chart and inserted in FMS for optimum performance. The method is given in the SOP.

DAY OBJECTIVES

- Perform integrated FMS tasks including holding.
- Apply Crew Resource Management attributes while practicing selected normal and non-normal procedures.
- Demonstrate continuous airplane control and navigation using the FMS auto flight system.
- Perform integrated systems management tasks.
- VNAV non-ILS approach procedures will be introduced per operator procedures.
- *Demonstrate required level of proficiency in normal in-flight procedures.
- *Demonstrate required level of familiarity performing appropriate air system, engine, APU, fire, and passenger evacuation non-normal procedures.

(*) Denotes proficiency items

ROUTE OF FLIGHT

ORIGIN	Schiphol International Airport (EHAM) RWY 18L Takeoff Position
ROUTE	*EHAM (RWY 18L) BERG4E BERGI L602 SUPUR L60 SOPEK L60 OTBED OTBED1M (RWY 23R) EGCC*
DEPARTURE	*BERG4E*
DESTINATION	MANCHESTER (EGCC)
ALTERNATE	EGLL
FLIGHT NUMBER	PIA 777

PERFORMANCE

GRWT	230,000 KGS	FLAPS	OPT
FUEL	30,000 KGS	CG	24%
ZFW	200,,000 KGS	WIND	200º/ 15
RESERVES	5,400 KGS	SLOPE	0
CRZ ALT	FL 300	EO ACCEL HT	1,000′
COST INDEX	180	ACCEL HT	3,000′
THRUST LIM	AS REQUIRED	THR REDUCTION	1,000

WEATHER

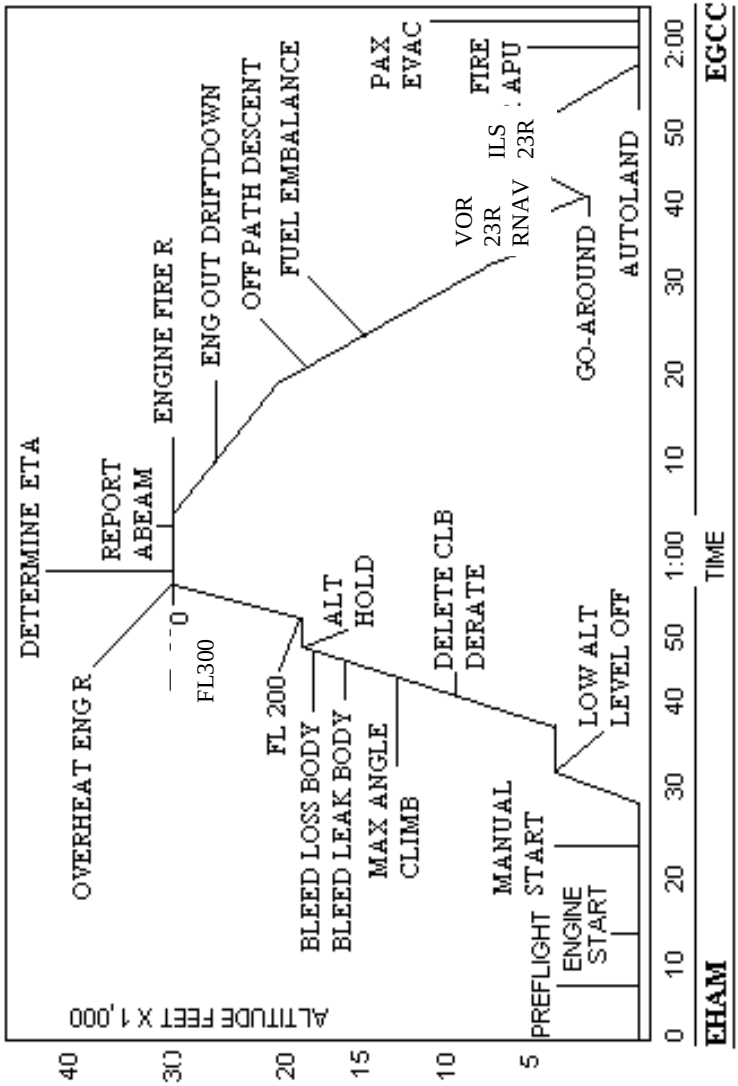
EHAM Wind 200/15 Visibility 15 kms Temperature 25 C dew Point 20C Altimeter 1012 Mb ILS RWY 18 L

EGCC Wind 350 / 15 Visibility 10 kms Temperature 25C Dew Point 19C Altimeter 1016 Mb ILS RWY 23 R

CLEARANCE

Pakistan 777 is cleared to Manchester *BERGE4E* Departure. *BERG1 L60 SOPEK* Squ awk 4776. Departure frequency 121.2.

PROFILE


ALTITUDE FEET X 1,000
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2:00
EHAM
TIME
EGCC
PREFLIGHT
ENGINE START
START
MANUAL
OVERHEAT ENG R
DETERMINE ETA
REPORT ABEAM
ENGINE FIRE R
FL300
FL 200
BLEED LOSS BODY
BLEED LEAK BODY
ALT HOLD
MAX ANGLE CLIMB
ENG OUT DRIFTDOWN
OFF PATH DESCENT
FUEL EMBALANCE
DELETE CLB DERATE
LOW ALT LEVEL OFF
VOR 23R
RNAV
ILS 23R
GO-AROUND
AUTOLAND
PAX EVAC
FIRE APU

PRE-FLIGHT	**REFERENCE**
Normal Procedures	FCOM NP.21
FMC Pre-Flight Procedures	FCOM NP.21
Manual route entry	FCOM
EHAM BERG4E BERGI L602 SOPUR L60	
SOPEK L60 OTBED OTBEDIM EGCC	
Departure: *BERG4E*	
Airways crossing fix	
Thrust limit as required	
Enter an assume temperature,	
Use CLB 1 for climb thrust – THRUST LIMIT PAGE	
ENGINE START	
Normal Procedures	FCOM NP.21
Before Start Procedures	FCOM NP.21
FMC before start procedures	FCOM NP.21.
Manual Start procedure	FCOM SP.7
Perform a Manual Engine Start on both engines	
After Start Procedures	FCOM NP.20
TAXI OUT	
Normal Procedures	FCOM NP.21
Flaps 5 OR 15 Take off	FCTM
TAKE OFF	
*Normal Procedures	FCOM NP.21
Use LNAV and VNAV for take off	
Flaps 15 take off	
(Use QRH for after take off checklist)	
CLIMB	
* Normal Procedures	FCOM NP.21
FMC procedure	FCOM 11
Low altitude level off	FCTM
Delete climb thrust derate (during initial climb)	FCOM 11
- THRUST LIMIT PAGE Maximum angle climb	
Expedite climb to FL 180 - VNAV climb page	

	REFERENCE
* BLEED LEAK BODY	QRH 2.2
* BLEED LOSS BODY (Reset when complete)	QRH 2.7
Immediate level off	FCOM
Maintain present altitude (app FL200) – ALT HOLD	
After level off continue climb to FL 300	

CURISE

* Normal Procedures	FCOM NP.21
FMC Operations	FCOM 11
* OVERHEAT ENG R Reset when complete	QRH 8.8
(Use QRH checklist)	
Determine ETA at LAMBOURNE (LAM) and BPK	FCOM 11
(FMC ROUTE PAGE & PROGRESS PAGE)	
Create Abeam point	FCOM 11
Report abeam CLN - FIX INFORMATION PAGE	FCOM 11
Arrival Procedure	
Arrival (OTBE1M) VOR 23R	
***** FIRE ENG R	QRH 8.2
CRM Considerations	
Resource Management	
Obtain All Required Information	
Obtain Assistance and Coordinate Information	
Use Other Aircraft for Assistance when Necessary	
Engine Out drift down	FCOM.11
Perform an engine out drift down to the engine	FCTM 4
Out maximum cruise altitude – EOD/D page.	

DESCENT

Normal Procedures	FCOM NP.21
At pilot's discretion descend and maintain 5,000	
FMC Operations	FCOM 11
Evaluate an OFFPATH DESCENT	FCOM 11
Evaluate a direct descent to a waypoint and altitude	
– OFFPATH DES page (discuss clean/drag circle)	
* FUEL IMBALANCE	QRH 12.13,

APPROACH	**REFERENCE**
Non Normal Procedures	FCOM NP .21,
VOR DME approach (LNAV and VNAV use)	FCOM NP 21, FCTM
Non ILS approach procedure VNAV	QRH
Fly pattern	FCOM NP21. FCTM
Use of autopilot recommended	
Fly off from FAF	
No waypoint modifications	
Flap configuration and speed Pacing	FCTM
Use of speed intervention	
LNAV and VNAV use	
One of the following required for VNAV use:	
Appropriate path with MAP at or before runway threshold Glide path angle published on chart and/or legs page Published VNAV DA (H)	
FMCS Certified for instrument approach navigation with radio or GPS updating RNP vs. ANP-RNP manual entry (0.3 for GPS).	
FMA annunciation	
Discuss “on approach” logic	FCOM 11 FCTM 5
Use of MDA (H) versus DA (H)	FCTM 5
If DA (H) is not published, the DA (H) may be considered to be the Equivalent of the currently applicable published MDA) H) Provided the Principal operations inspector grants this authorization.	
If required to use MDA (H) for the approach minimum altitude, the Barometric minimum selector should be set at MDA+50 feet to ensure that, if a missed approach is initiated, descent below the MDA (H) does not occur during the missed approach.	
Set MDA (H) or DA (H) on MCP Raw data requirements	FCTM
Set missed approach altitude	FCOM NP 21, FCTM
Autopilot disconnect	
Flight director procedures	
Visual flight path below DA (H) or MDA (H)	FCTM 8

GO-AROUND	**REFERENCE**
Non-Normal Procedures (Engine Inoperative)	QRH
Go-around (engine Inoperative)	FCOM NP.
Fly the published missed approach procedure	

APPROACH	
Non-Normal Procedures (Engine Inoperative)	FCOM
Flaps 20 landing	
ILS Approach (Engine Inoperative)	FCOM NP.21,FCOM
ILS RWY 23 R at Manchester	

LANDING	
Normal Procedures	FCOM NP.21
Automatic Landing	FCOM 4

TAXI IN	
Normal Procedures	FCOM NP.21
* FIRE APU	QRH 8.1
FIRE APU lead to a Passenger Evacuation	.
* PASSENGER EVACUATION	QRH BACK COVER

CRM Consideration – Crewmember Training
Development
Ensure Communication available with cabin crew
Keep cabin aware of plans
Lend support and encouragement

Additionally,
CRM Considerations – Communications Acquire information on airplane status. First Officer, Tower, Cabin Staff, Other. Resolve conflicting information. Advocate position and communicate.

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DAY SUMMARY

This Day is a flight from Manchester (EGCC) to London Heathrow (EGLL). FMS tasks continue to be integrated and practiced. Engine and hydraulic system non-normal procedures are practiced.

Thrust limit and flap setting has to be calculated through TOGW analysis chart and inserted in FMS for optimum performance. The method is given in the SOP.

DAY OBJECTIVES

- Perform integrated FMS tasks.
- Perform integrated systems management tasks.
- VNAV non-ILS approach procedures will be practiced per operator procedures.
- *Demonstrate continuous airplane control and navigation using the FMS and Auto flight system.
- *Demonstrate required level of proficiency in normal procedures such as engine start, taxi, takeoff SID and climb, FMC work, holding.
- *Demonstrate required level of proficiency in non-normal procedures ENG FAIL R, Hydraulic sys C practiced in this session.

(*) Denotes proficiency items

ROUTE OF FLIGHT

ORIGIN	Manchester (EGCC) Gate ---------- RWY 23 L
ROUTE	*EGCC SANBA1Y SANBA DCT PEDIG M605 DTY DCT WCO EGLL*
DEPARTURE	SONEX ONE YANKEE (SONE 1Y)
DESTINATION	LONDON (Heathrow) EGLL
ALTERNATE	EGBB
FLIGHT NUMBER	PIA 777

PERFORMANCE

GRWT	220,000 KGS	FLAPS	OPT
FUEL	20,000 KGS	CG	24%
ZFW	200,000 KGS	WIND	Calm
RESERVES	5,400 KGS	SLOPE	0
CRZ ALT	FL 290	EO ACCEL HT	1,000′
COST INDEX	180	ACCEL HT	3000′
THRUST LIM	AS REQUIRED	Thr Reduction	Flaps 5 or 15

WEATHER

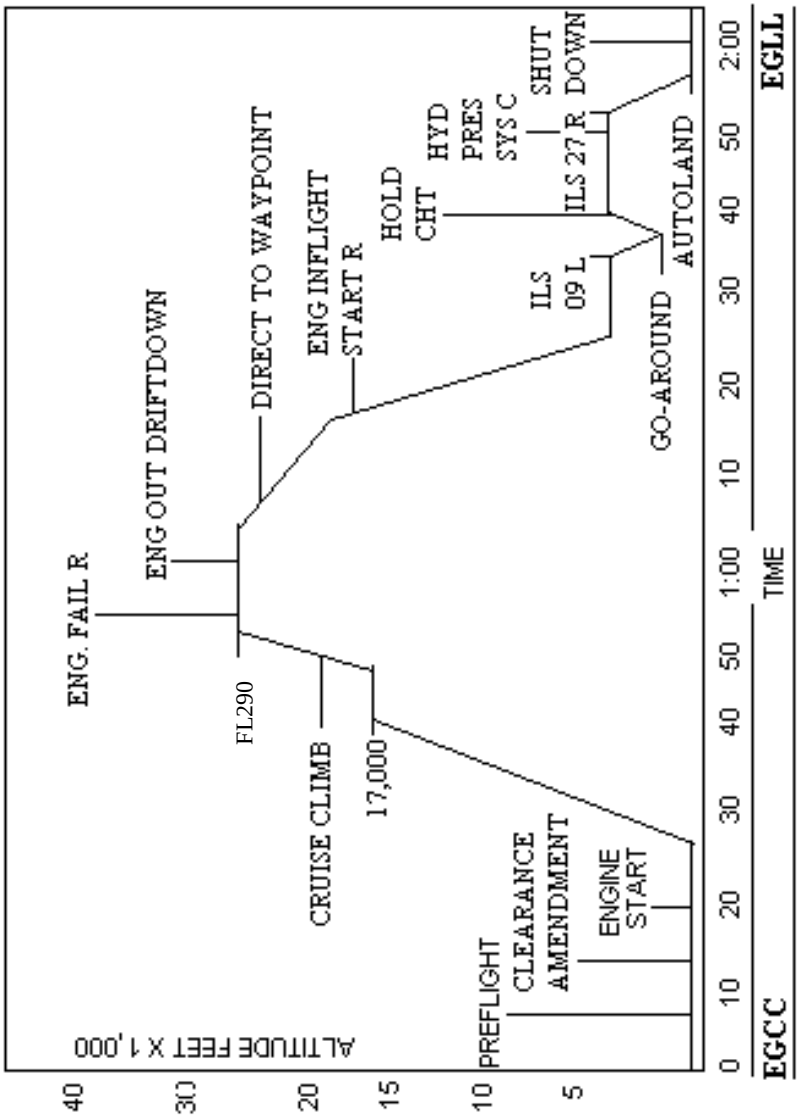
EGCC Wind calm / Visibility 5 Kms / Ceiling 3,000 Overcast / Temperature I5C Dew Point 11 C /Altimeter 1012 Mb / ILS RWY 05 L

EGLL Wind 210 / 10 / Visibility 7 miles / Ceiling 5,000 Broken / Temperature 25C / Dew Point 18C /Altimeter 1016 Mb / ILS RWY 27 L

CLEARANCE

Pakistan 777 is cleared to London Heathrow (EGLL), *SANB1Y* departure. *SANBA DCT PEDIG*, squawk 4747 departure frequency 136.57.

PROFILE


ALTITUDE FEET X 1,000
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ENG. FAIL R
ENG OUT DRIFTDOWN
FL290
DIRECT TO WAYPOINT
CRUISE CLIMB
17,000
ENG INFLIGHT
START R
PREFLIGHT
CLEARANCE
AMENDMENT
ENGINE
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1:00
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50
2:00
TIME
EGCC
EGLL

PRE-FLIGHT	**REFERENCE**
Normal Procedures	FCOM NP.21
FMC Preflight Procedures (Manual Entry)	FCOM NP.21
SONEX direct HON L10 to BPK direct LAM	
Thrust Limit as required	FCOM
Enter an assumed temperature, use Full CLB thrust - THRUST LIM page	

ENGINE START	
Normal Procedures	FCOM NP.21
Before Start procedures	FCOM NP.21
FMC before Start Procedures	FCOM NP.21
Clearance amendment, RWY 05 L now in use New route LISTO 2S SIERRA (LISTO 2S) From LISTO L612 HONILEY (HON) L10 to BPK then direct to LAM Use an assumed temperature take off; use full CLB thrust. Cruise altitude change – 17,000	
After Start Procedure	FCOM NP.21

TAXI OUT	
Normal Procedures	FCOM NP.21
Flaps 15 OR 5 take off	FCTM

TAKE OFF	
Normal Procedures	FCOM NP.21,
Use LNAV and VNAV for take off	

CLIMB	
Normal Procedures	FCOM NP.21
FMC Operations	FCOM

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CRUISE	**REFERENCE**
Normal Procedures	FCOM NP.21
FMC Operations	FCOM 11
Cruise Climb	FCOM 11
Climb and maintain FL 290 – Altitude Selector	
Arrival procedure	
BIG1Z	
*ENG FAIL R	QRH 7.14
Engine out Drift down	FCOM 11
Perform an Engine out drift down to the engine out	FCTM 4
Maximum cruise altitude EO D/D page	

DESCENT	
Normal Procedures	FCOM NP.21
FMC Operations	FCOM 11
Direct to a waypoint	FCOM 11
After HON proceed direct to Westcott	
(WCO NDB 335Khz)	
Engine In-Flight Start R	QRH 7.22
Arrival procedure	FCOM 11
Expect BNN 4A arrival ILS RWY 09 L approach	
At pilot's discretion descent and maintain 2500	
Cross WCO NDB at or above 7000	

APPROACH	
Normal Procedures	FCOM NP.21
ILS Approach	FCOM NP.21

GO-AROUND	
Normal procedures	FCOM NP.21
GO-AROUND	FCOM NP.21
Climb straight ahead when passing 1580 feet or	
D 0.0 IAA whichever is later turn left direct to	
Chiltern (CHT NDB 277Khz) and hold at 3000 feet.	

	REFERENCE
*Holding	FCOM 11
Hold at CHILTERN (CHT NDB as published)	
Climb and maintain 3,000 – HOLD page	
*HYD PRESS SYS C	QRH 13.4

APPROACH

Normal Procedures	FCOM NP.21
ILS Approach	FCOM NP.21
Radar vector to ILS RWY 27 L	
Display an extended approach course to	
D4.0 ILL (INTC) 27 L - ARRIVAL page	

LANDING

Normal Procedures	FCOM NP.21
Automatic Landing	FCOM

TAXI-IN

Normal Procedures	FCOM NP.21

SHUTDOWN

Normal Procedures	FCOM NP.21

Restore all systems to normal prior to shutdown.

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DAY SUMMARY

This Day is a flight in icing conditions from Manchester (EGCC) to London (EGLL) with a diversion back to Manchester (EGCC). It continues to introduce and practice non-normal procedures. Emphasis will be on engine, icing, and hydraulic system non-normal procedures, and fuel jettison and in-flight diversion considerations and procedures.

Thrust limit and flap setting has to be calculated through TOGW analysis chart and inserted in FMS for optimum performance. The method is given in the SOP.

DAY OBJECTIVES

- Perform integrated FMS tasks.
- Apply Crew Resource Management attributes while practicing selected normal and non-normal procedures.
- VNAV non-ILS approach procedures will be practiced per operator procedures.
- *Demonstrate appropriate level of proficiency performing integrated systems management tasks.
- *Demonstrate required level of proficiency in performing normal approach procedures.
- Demonstrate required level of familiarity performing appropriate environmental, Engine, fuel, and hydraulic system non-normal procedures.

(*) Denotes proficiency item.

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ROUTE OF FLIGHT

ORIGIN	MANCHESTER (EGCC) Gate -------- RWY 05 L
ROUTE	*EGCC (RWY 05L) LISTO2S LISTO L612 HON HONIH EGLL (27L)*
DEPARTURE	*LISTO2S*
DESTINATION	LONDON Heathrow (EGLL)
ALTERNATE	MANCHESTER (EGCC)
FLIGHT NUMBER	B777

PERFORMANCE

GRWT	240,000 KGS	FLAPS	OPT
FUEL	30,000 KGS	CG	25%
ZFW	210,000 KGS	WIND	320º / 15
RESERVES	5,400 KGS	SLOPE	0
CRZ ALT	FL 250	EO ACCEL HT	1,000′
COST INDEX	180	ACCEL HT	3000
THRUST LIM	AS REQUIRED	THR REDUCTION	1,000′

WEATHER

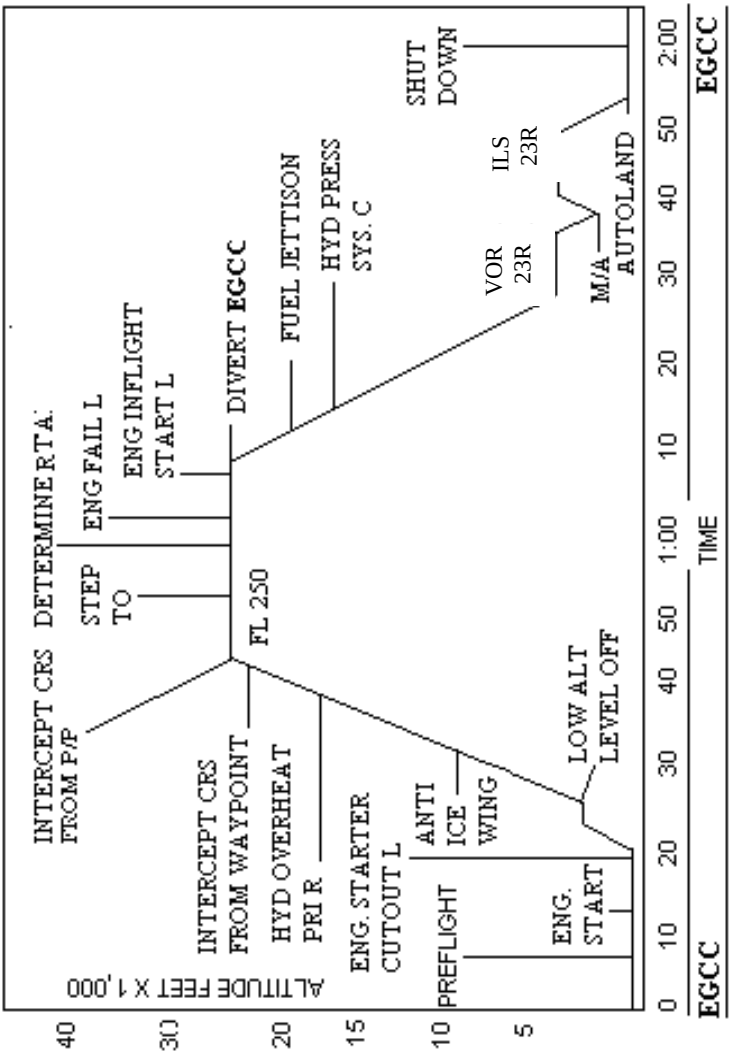
EGCC Wind 320/15 Visibility 5 km Rain Ceiling 2000 Overcast Temperature 0I° C Dew Point 0° C, Altimeter 1011 Mb RWY 05 L.

EGLL Wind 260/ 10 Visibility I000m Rain Ceiling 500 Overcast Temperature 05° C Dew Point 0°C Altimeter 1007 Mb ILS RWY 27 L.

.

CLEARANCE Pakistan 777 is cleared to London *LISTO2S* departure, squawk 2523. Departure frequency 128.05

PROFILE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TIME
EGCC
EGCC
INTERCEPT CRS FROM P/P
DETERMINE RTA:
STEP TO
ENG FAIL L
ENG INFLIGHT START L
DIVERT EGCC
FUEL JETTISON
HYD PRESS SYS. C
VOR 23R
ILS 23R
SHUT DOWN
FL 250
INTERCEPT CRS FROM WAYPOINT
HYD OVERHEAT PRI R
ENG. STARTER CUTOUT L
ANTI ICE WING
PREFLIGHT
ENG. START
LOW ALT LEVEL OFF
M/A
AUTOLAND

PRE-FLIGHT	**REFERENCE**
Normal Procedures	FCOM/NP.21
FMC Preflight procedures	FCOM/NP.21,
Manual Route entry	FCOM
Route non standard airway clearance MONTY N864 DIKAS DIRECT KENET	
Departure MONTY ONE SIERRA (MONTY 1S)	
Thrust Limit as required	FCOM 11
Enter or check climb derate of CLB 1 – THRUST LIM page	

ENGINE START	
Normal Procedures	FCOM/NP.21
Before Start Procedures	FCOM/NP.21
FMC before Start procedures	FCOM NP.21
*ENG STARTER CUTOUT L	QRH 7.37
After Start Procedures	FCOM
Engine Anti-Ice required	FCOM SP

TAXI OUT	
Normal Procedures	FCOM/NP.21
Flaps 5 OR 15 take off	

TAKE OFF	
Normal Procedures	FCOM NP.21
Use LNAV and VNAV for take off	

CLIMB	
Normal Procedures	FCOM NP.21
*FMC Operations	FCOM 11
Low Altitude level off	FCOM , FCTM
*ANTI-ICE WING	FCOM, QRH 3.6
*HYD. OVERHEAT PR1 R	FCOM, QRH 13.2
Intercept course from a waypoint	FCOM 11
Ten miles before WAL VOR (114.1) turn left heading 200 to intercept the 165 radial from WALLASEY (WAL 114.1) VOR (WAL165 ON LEG page)	
Intercept course from present position (P/P) When past abeam MONTY fly course 225 *turn L 090 HDG intercept L15 to HON* (P/P225 ON LEGS PAGE)	

CRUISE	**REFERENCE**
Normal Procedures	FCOM NP.21
FMC Operations	FCOM 11
STEP TO	FCOM 11
Determinate the time and distance to the step climb point for a step climb to FL 410 – VNAV CRZ & PROGRESS page	
Discussion only, DO NOT execute	
Determine RTA at TAPRO PROGRESS PAGE	FCOM 11
* FUEL LEAK	QRH 12.18
CRM consideration – Resource Management	
Obtain all required information	
Obtain assistance and coordinate information	
Prepare for route alterations	
One Pilot flies he other pilot works the problem	
Address and resolve the problem	
Divert (Selection of an alternate)	FCOM 11
Arrival procedures	

Select Manchester as alternate using HON as the overhead divert point – ALTN page

Proceed direct to LESTA

LESTA1M arrival for VOR DME 23 R approach (use LNAV and VNAV for approach).

Another t /off with same WT. passing 10000 ft, ATC has advised London airfield closed due security reason ,Delay undetermined.

DESCENT	**REFERENCE**
Normal Procedures	FCOM NP.21
Descend and maintain 6000 feet	
FMC Operations	FCOM 11
*FUEL JETTISON	QRH 12.16
Perform a fuel jettison to reduce weight to maximum Landing weight (MLW)	
*HYD PRES SYS C.	QRH 13.4

APPROACH	**REFERENCE**
*Normal procedures	FCOM NP.21
VNAV VOR approach (23 R)	FCOM NP.21
GO-AROUND	
Normal Procedures	FCOM NP.21
GO-AROUND (Published procedure)	FCOM NP.21
APPROACH	
* Normal Procedures	FCOM NP.21
ILS approach 23 R approach (Radar Vector)	FCOM NP.21
LANDING	
* Normal Procedures	FCOM NP.21
Automatic Landing	FCOM 4
TAXI-IN	
Normal Procedures	FCOM NP.21
SHUTDOWN	
Normal Procedures	FCOM NP.21
Restore all systems to normal prior to shutdown.	

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DAY SUMMARY

This Day is a flight from Manchester (EGCC) to London Heathrow (EGLL) with a diversion into Birmingham (EGBB) it uses the full capabilities of the airplane systems including FMS. Emphasis is on display, cargo fire, air system, and flight control non-normal procedures. This flight reviews and enhances proficiency for the next phase of training.

Thrust limit and flap setting has to be calculated through TOGW analysis chart and inserted in FMS for optimum performance. The method is given in the SOP.

DAY OBJECTIVES

- Demonstrate appropriate level of proficiency performing FMS tasks.

- Demonstrate the appropriate level of proficiency maintaining continuous airplane control and navigation using the FMS auto flight system during complex situations under adverse conditions.

- Demonstrate the required level of proficiency performing go-around procedures.

- Demonstrate required level of familiarity performing appropriate display, cargo fire, air system, and flight control non-normal procedures. Evaluate crew progress/proficiency prior to the next phase of training. Provide any necessary training or recommendation prior to the next phase of training.

(*) Denotes proficiency item.

ROUTE OF FLIGHT

ORIGIN	MANCHESTER (EGCC) Gate ------- RWY 23 R
ROUTE	*EGCC SANBIR SANBA DCT PEDIG M605 DTY DCT WCO EGLL*
EPARTURE	LONDON Heathrow (EGLL)
DESTINATION	BIRMINGHAM (EGBB)
ALTERNATE	PIA 777
FLIGHT NUMBER	

PERFORMANCE

GRWT	220,000 KGS	FLAPS	OPT
FUEL	20.000 KGS	CG	23%
ZFW	200,000 KGS	WIND	Calm
RESERVES	5,400 KGS	SLOPE	0
CRZ ALT	FL 250’	EO ACCEL HT	1,000′
COST INDEX	180	ACCEL HT	3,000′
THRUST LIM	AS REQUIRED	THR REDUCTION	1,000′

WEATHER

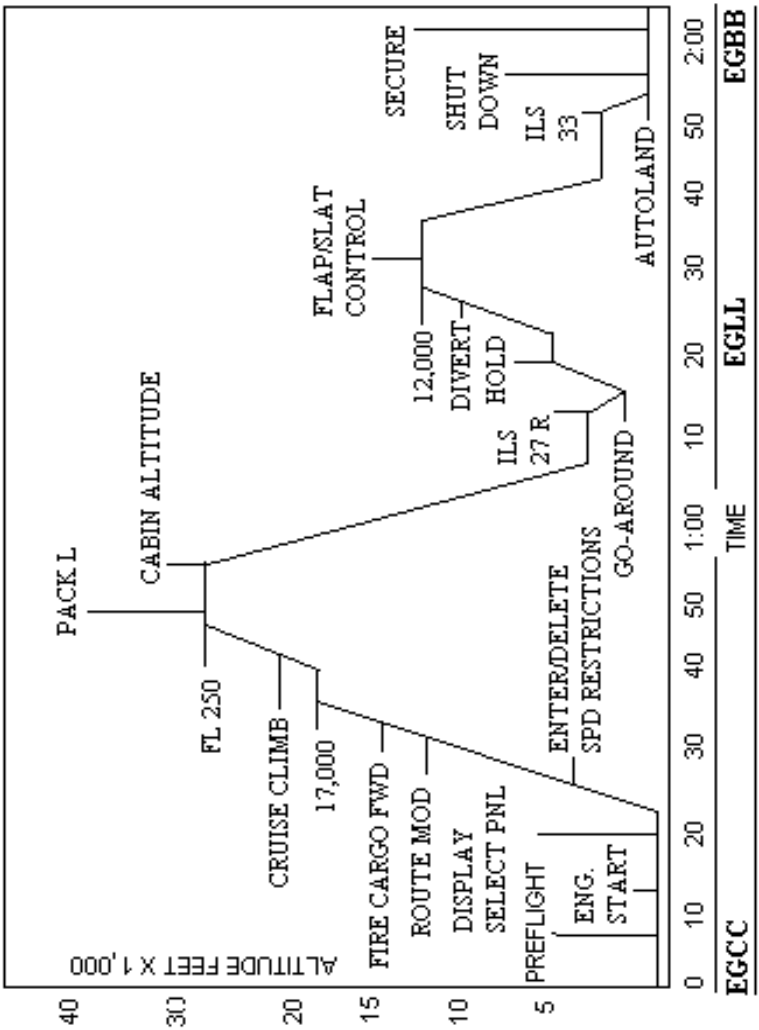
EGCC Wind calm Visibility 2 km / Light Snow Ceiling 1000 Overcast Temperature 00C / Dew Point -20C Altimeter 1007 Mb RWY 23 R

EGLL Wind calm Visibility 1km Fog Ceiling 400 Overcast Temperature 08C Dew Point 06 C I Altimeter 1006 Mb ILS RWY 27 R

EGBB Wind 020/10 Visibility 9 km Haze Ceiling 3000 Broken Temperature 09C Dew Point 02C Altimeter 1008 Mb ILS RWY 33

CLEARANCE **Pakistan** 777 is cleared to London Heathrow *SANBIR* departure, squawk 4465. Departure frequency 136.57.

PROFILE


ALTITUDE FEET X 1,000
40
30
20
15
10
5
PACK L
CABIN ALTITUDE
FL 250
CRUISE CLIMB
17,000
FIRE CARGO FWD
ROUTE MOD
DISPLAY
SELECT PNL
PREFLIGHT
ENG.
START
ENTER/DELETE
SPD RESTRICTIONS
GO-AROUND
ILS
27 R
12,000
DIVERT
HOLD
FLAP/SLAT
CONTROL
AUTOLAND
ILS
33
SHUT
DOWN
SECURE
0
10
20
30
40
50
1:00
10
20
30
40
50
2:00
EGCC
TIME
EGLL
EGBB

PREFLIGHT	**REFERENCE**
Normal Procedures	FCOM NP.21
FMC Preflight procedure	FCOM NP.21
Manual route entry	FCOM
Route SONEX direct DESIG L603 DOLAS direct LAM	
TO thrust limit as required	FCOM
Enter or check climb derate of CLB 2 – THRUST LIM page.	
ENGINE START	
Normal procedures	FCOM NP.21
Before Start procedures	FCOM NP.21
FMC before Start procedures	FCOM NP.21
After Start procedures	FCOM NP.21
* Engine Anti-Ice required	FCOM SP
TAXI-OUT	
Normal Procedures	FCOM NP.21
Flaps 15 OR 5 take off	
TAKE OFF	
Normal procedures	FCOM NP.21,
Use LNAV and VNAV for take off	
DISPLAY SELECT PNL	FCOM 10
CLIMB	
Normal Procedures	FCOM NP.21
FMC Operations	FCOM 11
Enter/delete speed restriction	FCOM 11
Maintain 220 knots for traffic separation	
IAS/MACH Selector (speed intervention)	
Resume normal climb speed	
Route modification	
After DOLAS direct BANEM, join *N866* (to) *DIGSU*	
CROSS SECTION OF N866 AND L10 to BPK	
* FIRE CARGO FWD	QRH 8.14

CRUISE	**REFERENCE**
Normal procedures	FCOM NP.21
*FMC Operations	FCOM 11
Cruise Climb	
Climb and maintain FL 250 – Altitude Selector.	
* PACK L	QRH 2.14
Arrival procedure	
From present position direct to LAM and hold SOUTH WEST on radial 266 left turn radar vector ILS RWY 27 R approach (London Heathrow)	
*CABIN ALTITUDE	QRH 2.1
Malfunction leads to a rapid descent.	FCTM 7
Be aware that Communications barriers are present keep all informed of decisions and intentions: First Officer Cabin ATC.	
Additionally,	
CRM considerations – Problem solving process	
Use all resources to gather information	
Be aware of time constraints	
Discuss, propose, seek feedback, and take action.	

DESCENT	**REFERENCE**
*Normal Procedures	FCOM NP.21
FMC Operations	FCOM 11
Amended missed approach clearance	FCOM
At 1000 AGL turn right direct to BUZAD climb 4000	

APPROACH	**REFERENCE**
* Normal Procedures	FCOM NP.21
ILS approach	FCOM
ILS RWY 27 R approach at London (EGLL)	

GO-AROUND	**REFERENCE**
*Normal procedures	FCOM NP.21
Go-around	FCOM NP 21,
At 1000 AGL proceed direct to BUZAD climb and Maintain 4000	
Engine Failure during go-around	FCOM/QRH
CRM Consideration-Resource Management	
Obtained all required information	
Obtain assistance and coordinate information	
Engine in-flight start	FCOM/QRH
CRM Consideration-Situation awareness	
Prepare for route alteration	
PF and PM specific duties must be followed	
Address and resolve the problem	
Divert (Selection of an alternate)	FCOM
Divert to Birmingham (EGBB) – ALTN page	FCOM
New Cruise altitude	
Climb and maintain FL 120	
Arrival procedure	
GROVE 1A arrival ILS RWY 33 approach at Birmingham (EGBB)	
FLAP/SLAT CONTROL	QRH 9.8
Proceed direct to holding position GROVE (Radial 286 of HON VOR)	
Hold at GROVE North West with right turn	

APPROACH	**REFERENCE**
Normal Procedures	FCOM NP.21
After departing holding position GROVE descent maintain 2500 and heading 154 for ILS RWY 33 approach (Birmingham) Radar Vector to the ILS RWY 33 approach at Birmingham.	
Display an extended approach course D4.0 IBM (MAPLE) RWY 33 - ARRIVAL PAGE	

LANDING	**REFERENCE**
Normal procedures	FCOM NP.21
Automatic landing	FCOM

TAXI-IN	**REFERENCE**
Normal Procedures	FCOM NP.21

SHUT DOWN	**REFERENCE**
Normal Procedures	FCOM NP.21
SECURE	**REFERENCE**
Normal Procedures	FCOM NP.21

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FULL FLIGHT SIMULATOR

INTRODUCTION

The Full Flight Simulator Days are designed to include normal, supplementary normal and non-normal procedures as published in the Operations Manual.

Each day's program has three parts: a one-hour briefing, a four-hour simulator period divided into two segments, and a debriefing. The four hour simulator period is designed for two pilots to each fly a two-hour segment. Immediately following each period, a debriefing consisting of a review of the trainee's performance will be conducted by the instructor. Items to study for the next period will be identified.

Each Day is organized in a "Phase of Flight" format that specifies training items to be completed and the sequence of presentation. Other information includes the weather and airplane information for calculating takeoff performance. Airfield information can be obtained from the approach charts.

Each Day contains briefing items which are referenced to sections in the Operations Manual (FCOM) or the Flight Crew Training Manual (FCTM). You are expected to become thoroughly familiar with these items prior to each training period.

As much as practical, realism will be maintained during training. The instructor will act as Company dispatcher, ground crew, and ATC. Flights will be flown in real time except when repositioning is specified in the Day plan. These requirements do not preclude verbal instructions and comments when appropriate, and position freezing and repositioning to make more efficient use of available time.

The trainee is expected to demonstrate a satisfactory level of skill and knowledge in the performance of all maneuvers and procedures.

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GENERAL GUIDANCE TO INSTRUCTORS

The Full Flight Simulator Days include Normal, Supplementary and Non-Normal procedures as published in the Flight Crew Operating Manual (FCOM), and the Flight crew Training Manual (FCTM). Days culminate in the Pilot Proficiency Check (PPC).

Each Day's programmed has 3 parts; a one hour briefings a four hour simulator period (divided into 2x2 hour periods) wherein the Day will be repeated for each trainee, and a debriefing. At the end of the debriefing, the Instructor should identify those items to study for the next period.

Each Day is organized in a "Phase of Flight" format that specifies training items to be completed and the sequence of presentation. A loft type scenario, using airfields on PIA network, is used whenever practicable. Details of each Day are contained in this Guide, along with flight data to be used which includes weather, aircraft, and route information. Performance data should be supplied by the Instructor, and trainees will use standard Jeppesen charts throughout.

Each Day contains briefing items which are referenced to the FCOM or the FCTM. Trainees are expected to review and familiarize themselves with these items before each Day. For purposes of standardization, Instructors should closely adhere to the briefing notes, which are derived from the FCOM, FCTM, and general Boeing guidance.

As far as practicable, realism should be maintained during Full flight Simulator training. Headsets should be used, and all normal communications are to be expected. To this end, the Instructor should act as ATC, ground crew, cabin crew, and Company operations staff. Flights should be flown in real time whenever it impacts realism, the Instructor should advise trainees that repositioning is taking place, and he should provide reorientation guidance.

Instructors will instruct and comment in real time, so the previous paragraph does not preclude verbal instructions and comments where appropriate, and the use of position or flight freeze facilities of the simulator is encouraged where they enhance training value.

The trainee is expected to demonstrate the required level of skill, experience, and knowledge in the performance of all the designated

maneuvers and procedures. Though each trainee is required to pass a PPC at the end of Full Flight Simulator Training, his performance should be continuously evaluated throughout.

Instructors to ensure that during intermediate/final level off vertical speed is reduced to 1000 fpm when 1000 ft to level off altitude, in order to reduce frequency of unnecessary TCAS 'RA' activation.

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14.0 SPECIAL TRAINING PROGRAMMES

14.4 CONTROLLED FLIGHT INTO TERRAIN (CFIT)

During training sessions Instructors to ensure that CFIT training and practice are provided for the pilots to experience realistic situations that require timely decisions and correct responses. During the training, the escape maneuver should be practiced to proficiency by both pilots. Initial training should occur in VMC and should emphasize the need to react to all GPWS warnings. **Effective flight crew coordination should be emphasized**, especially when operating in the high potential-CFIT phases of flight i.e. takeoff, approach, and landing.

SIMULATOR TRAINING

CFIT simulator training should be given during initial transition and recurrent training. This training should follow a building block approach to learning. It is recognized that there are many contributing factors that may lead to the loss of vertical and horizontal situational awareness by the flight crew. Because of this, the flight crew cannot be exposed to all of the situations in the simulator that they may confront during their normal flight operations. However, a well-structured training program will include exposure to a sufficient number of contributing factors in each exercise to make the training as realistic as possible.

CFIT scenarios can be introduced during:

- A low-altitude level-off just after takeoff, with a radar vector turn toward high terrain, and no subsequent vectoring.
- An early enroute descent into a mountainous/hilly terminal area in an intensive communications environment or in adverse weather conditions during a non precision approach.
- A takeoff or missed approach with a low-altitude level off and a turn toward high terrain.

Fig 1.

Exercise	Description	Training Objectives
1.	Insert a simulator "mountain*" in VFR conditions during flight on the downwind leg of the traffic pattern	Demonstrate GPWS warnings and proper response times and procedures for the escape maneuver.
2.	Insert a simulator "mountain*" in IMC during an appropriate phase of flight.	Demonstrate flight crew awareness and coordination in CFIT situations. Practice correct escape maneuver procedures.

* Invisible, rapidly rising terrain simulator feature.

The simulator training should include:

- A briefing.
- A minimum of two exercises. Refer to Figure 1.
- A critique.

Before the CFIT exercise:

- Review the need for crew awareness and coordination.
- Discuss the importance of knowing GPWS warnings and the requirement for rapid flight crew response to these warnings.
- Review CFIT traps.
- Review the escape maneuver/procedure and pilot techniques.

14.2 APPROACH AND LANDING ACCIDENT REDUCTION (ALAR)

A stabilised approach provides a basis for a good landing, it provides the crew with the optimum conditions to flare, land, and stop the aircraft.
An approach must be stabilised by 1,000 ft in IMC and by 500 ft in VMC.

1. The aircraft must be on the correct flight path.

2. Only small changes in heading and pitch are required to maintain the correct flight path.

3. The aircraft speed is less than Vref+20 kts, and less than Vref + 15 kts at the threshold.

4. The aircraft is in the landing configuration.

5. Sink rate less than 1,000 feet per minute.

6. Power setting appropriate for configuration.

7. All briefings and checklists have been completed.

8. Instrument landing system (ILS) approaches - must be flown within the equivalent of one dot of the glideslope or localizer.

9. Visual approaches - wings must be level on final before 500 ft.

10. Circling approaches - wings must be level on final before 300 ft.

Unique qpproach procedures or abnormal conditions requiring a deviation from the above elements of a stabilised approach require a special briefing.

14.3 UPSET PREVENTION AND RECOVERY TECHNIQUE (UPRT)

For instructional purposes, several different airplane uptset situations should be discussed. These include the following:

- Nose high, wings level.
- Nose low, wings level.
  --Low airspeed.
  --High airspeed.
- High bank angles.
  --Nose high.
  --Nose low.

Airplanes that are designed with electronic flight control systems, commonly referred to as “fly-bywire” airplanes, have features that should minimize the possibility that the airplane would enter into an upset and assist the pilot in recovery, if it becomes necessary. But, when fly-by-wire airplanes are in the degraded flight control mode, the recovery techniques and aerodynamic principles discussed in this training aid are appropriate. Some environmental conditions can upset any airplane. But the basic principles of recognition and recovery techniques still apply, independent of flight control architecture.

Airplane autopilots and autothrottles are intended to be used when the airplane is within its normal flight regime. **When an airplane has been upset, the autopilot and autothrottle must be disconnected as a prelude to initiating recovery techniques.** Situational analysis of the energy state of the aircraft is also required. This analysis assesses the energy and trend. This includes but is not limited to altitude, airspeed, attitude, load factor, power setting, position of flight controls, position of drag and high-lift devices, and the rate of change. This analysis may cause the crew to make appropriate changes, such as use of speed brakes or lowering the landing gear for drag as necessary to aid in the recovery. In other words, manage the energy.

Note: Higher than normal control forces may be required to control the airplane attitude when recovering from upset situations. Be prepared to use a firm and continuous force on the control column and control wheel to complete the recovery.

Guidance is given in B-777 FCTM (7.15) and B-777 QRH (MAN 1.7)

14.4 STALL AND RECOVERY

Recovery from stall requires a deliberate and smooth reduction in wing angle of attack. The elevator is the primary pitch control in all flight conditions, not thrust.

The present approach to stall technique being employed is focused on "powering" out of the near-stalled condition with emphasis on minimum loss of altitude. At high altitude this technique may be totally inadequate due to the lack of excess thrust. It is impossible to recover from a stalled condition without reducing the angle of attack and that will certainly result in a loss of altitude, regardless of how close the airplane is to the ground. Although the thrust vector may supplement the recovery it is not the primary control. At stall angles of attack, the drag is very high and thrust available may be marginal. Also, if the engine(s) are at idle, the acceleration could be very slow, thus extending the recovery.

Guidance is given in B-777 FCTM (7.8) and B-777 QRH (MAN 1.1)

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DAY SUMMARY

This Day is a flight from Manchester (EGCC) to London Heathrow (EGLL). The crew performs a complete preflight. Normal procedures and a few non-normals will be practiced. Emphasis will be on familiarizing the student with manual flight characteristics and ground handling techniques of the airplane. Demonstrations will also be conducted to familiarize the crew with flight envelope protection features of the B-777.

Thrust limit and flap setting has to be calculated through TOGW analysis chart and inserted in FMS for optimum performance. The method is given in the SOP.

DAY OBJECTIVES

- Integrate selected normal and non-normal procedures.
- Initiate practice of manual flight characteristics of fly-by-wire, alert, envelope Protection systems, manual ILS, visual approaches, touch and go and full stop Landings.
- Apply Crew Resource Management attributes while practicing selected normal and Non-normal procedures.
- Improve skill level of previous training objectives.
- Demonstrate required level of proficiency in aborted engine start, cruise, and Descent procedures.

(*) Denotes proficiency item.

ROUTE OF FLIGHT

ORIGIN	Manchester (EGCC)
ROUTE	*EGCC SANBA1R SANBA UN859 HON L10 DTY WCO EGLL*
DEPARTURE	SONEX ONE ROMEO (SONE 1R)
DESTINATION	London Heathrow (EGLL)
FLIGHT NUMBER	PK777

PERFORMANCE

GR WT	220,000 KGS	FLAPS	OPT
FUEL	20,000 KGS	CG	23%
ZFW	200,000 KGS	WIND	230/15
RESERVES	6,100 KGS	SLOPE	ZERO
CRZ ALT	15,000’	EO ACCEL HT	1,000
COST INDEX	180	ACCEL HT	3,000’
THRUST LIM	AS REQUIRED	THR REDUCTION	1,000’

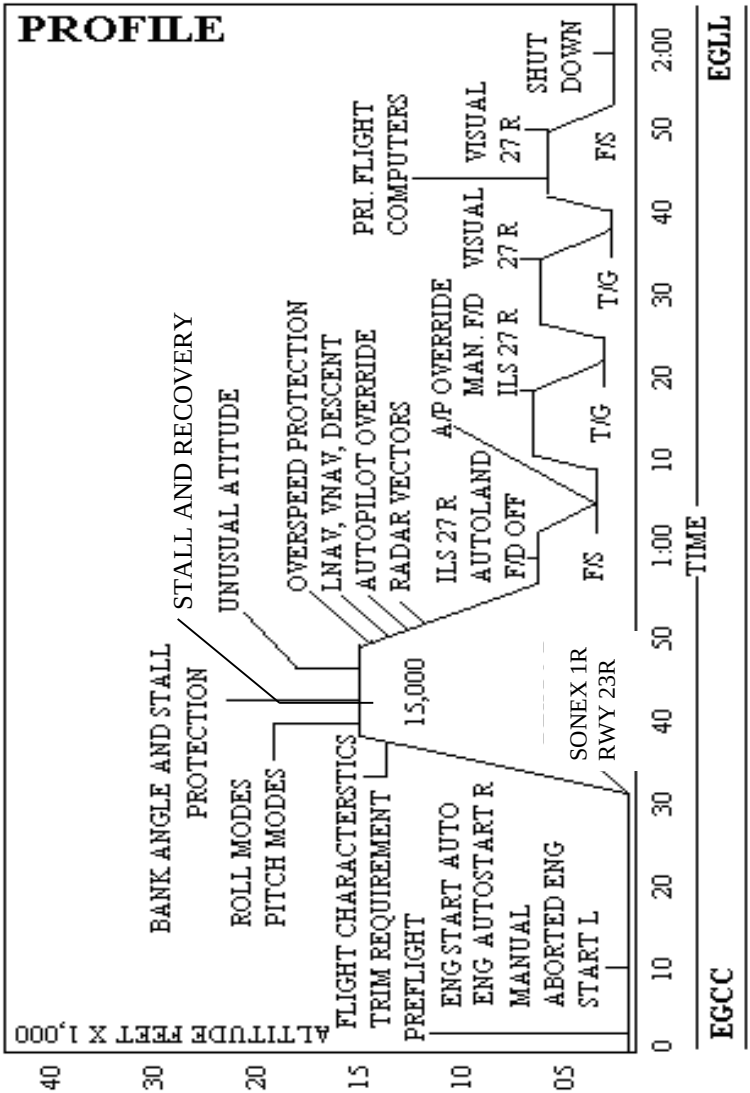
WEATHER

EGCC Wind 230/15 Visibility 20 km SKC Temperature 15^{0}C Dew Point 10^{0}C Altimeter 1013 Mb RWY 23 R.

EGLL Wind 270/20 Visibility 25 km SKC Temperature 25^{0}C Dew Point 4^{0}C Altimeter 1013 Mb ILS RWY 27 R.

CLEARANCE

Pakistan 777 is cleared to London Heathrow *SANBAIR* departure. Squawk 2550. Departure frequency 136.57.


PROFILE
ALTITUDE FEET X 1,000
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2:00
TIME
EGCC
EGLL
BANK ANGLE AND STALL PROTECTION
ROLL MODES
PITCH MODES
STALL AND RECOVERY
UNUSUAL ATITUDE
OVERSPEED PROTECTION
LNAV, VNAV, DESCENT
AUTOPILOT OVERRIDE
RADAR VECTORS
FLIGHT CHARACTERSTICS
TRIM REQUIREMENT
PREFLIGHT
ENG START AUTO
ENG AUTOSTART R
MANUAL
ABORTED ENG
START L
15,000
ILS 27 R
AUTOLAND
F/D OFF
A/P OVERRIDE
MAN. F/D
ILS 27 R
VISUAL
27 R
VISUAL
27 R
PRI. FLIGHT COMPUTERS
SONEX 1R
RWY 23R
F/S
T/G
T/G
T/G
F/S
SHUT DOWN

PREFLIGHT	**REFERENCE**
Normal Procedures	FCOM NP.21, FCTM
Program FMC, Set trim, airspeeds And mode Control Panel	FCOM
Seat Position	FCOM
Accomplish Checklists	

ENGINE START	**REFERENCE**
Normal Procedures	FCOM NP.21
Auto start – Hot Start	
*ENG AUTO START R	QRH 7.3, FCOM
Manual Start – Hung Start	FCOM SP.7
*ABORTED ENG START L	QRH 7.1, FCOM

TAXI-OUT	
Normal Procedures	FCOM NP.21, FCTM
Taxi	
Thrust/Jet blast	
Tiller/rudder pedal steering	
Turn radius/wing tip travel	
Pavement width requirements	
180 turns	
Main/nose gear ground track	
Taxi speed/ND GS display	
Take off briefing	

TAKE OFF	**REFERENCE**
Take off	FCOM NP.21,FCTM
LNAV/VNAV	FCOM 11
Setting TO Thrust (auto throttle)	FCOM
Rotation rate and target pitch attitude	FCTM
Flap Retraction	
Flap Maneuvering Speeds	FCTM
Flight Mode Annunciates (FMAs)	

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CLIMB	**REFERENCE**
Normal Procedures	FCOM NP.21
Climb (No autopilot)	
Climb Speeds	
Flight characteristics	
Exercise roll rates, heading, and airspeed change	
Trim requirements	
Change roll and pitch modes.	

CRUISE	**REFERENCE**
*Normal procedures	FCOM NP.21, FCTM
Econ cruise at 15,000 feet	
Demonstration of:	
Bank angle protection	FCOM, FCTM
Stall Protection	
Stall and recovery	QRH, FCTM
Auto throttle Wakeup	
Unusual attitudes (Nose high/Nose low)	QRH, FCTM
Recognition	
Recovery	

DESCENT	**REFERENCE**
Demonstration of:	
Over-speed Protection	FCOM, FCTM
*Normal Procedures	
LNAV/VNAV Descent Profile	FCOM NP.21, FCTM
Engage autopilot	FCOM 4
Demonstrate autopilot override (Pitch/roll)	
Engage autopilot	

APPROACH and LANDING	**REFERENCE**
ILS auto land approach RWY 27 R (F/D off), full stop landing	FCOM NP.21

	REFERENCE
Approach Selection	FCOM 11
Intercept course to	FCOM 11
NAV radios, visual and Aural ID	FCOM 11
ILS Auto Tune	FCOM 11
Flap extension/maneuver speeds	FCTM
Note pitch attitudes and power settings	
At all flaps position	
FMAs	
Standard Callouts	FCTM, SOP
Flare and touchdown	FCOM
Autopilot and auto throttle disconnect	FCOM
Autopilot override (landing rollout)	FCOM

TAKE OFF	**REFERENCE**
Normal Procedures	FCOM NP.21,FCTM

APPROACH and LANDING

Manual, F/D, ILS approach RWY 27 R	
Touch & go landing	FCOM, FCTM
Intercept Course to	FCOM
Landing flare	

APPROACH and LANDING

Visual Traffic Pattern RWY 27 R	
Touch & go Landing	QRH, FCTM
Pattern altitude/timing	
Landing gear/Flaps extension	
PAPI/VASI	
Map Runway Display	
Trend Vector	

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APPROACH and LANDING	**REFERENCE**
*PRI FLIGHT COMPUTERS	QRH 9.22, FCOM
Primary flight computers fail	
Secondary/Direct Mode	FCOM
Reverse Procedures	
PNF Callouts	FCTM
Visual traffic pattern RWY 27 R	
Full Stop landing	QRH, FCTM

TAXI-IN and SHUTDOWN	**REFERENCE**
Normal Procedures	FCOM
After landing	
Shutdown	

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DAY SUMMARY

This Day is a flight from London Heathrow (EGLL) to Manchester (EGCC) with a weather diversion required. Normal procedures and selected non-normal will be practiced. Emphasis will be on a loft exercise followed by visual approaches and landings.

Thrust limit and flap setting has to be calculated through TOGW analysis chart and inserted in FMS for optimum performance. The method is given in the SOP.

DAY OBJECTIVES

- Integrate selected normal and non-normal procedures.
- Initiate practice of air conditioning pack failure, loss of cabin pressurization and hydraulic pump failure.
- Apply Crew Resource Management attributes while practicing selected normal and non-normal procedures.
- Improve skill level of previous training objectives.

ROUTE OF FLIGHT

ORIGIN London Heathrow (EGLL) RWY 27 R

ROUTE BPK N601 POL

DEPARTURE BROOKMAN PARK SEVEN FOXTROT (BPK 7F)

DESTINATION Manchester (EGCC)

FLIGHT NUMBER PIA777

PERFORMANCE

GRWT	240,000 KGS	FLAPS	opt
FUEL	30,000 KGS	CG	23%
ZFW	210,000 KGS	WIND	230/5
RESERVES	5,600 KGS	SLOPE	0
CRZ ALT	FL 310	EO ACCEL HT	1,000’
COST INDEX	180	ACCEL HT	3,000’
THRUST LIM	AS REQUIRED	THR REDUCTION	1,000’

WEATHER

EGLL Wind 230/05 Visibility 6 km Ceiling 1000 Overcast Temperatures 10C Dew Point 09C Altimeter 1012 Mb ILS RWY 27 R.

EGCC Wind 230/5 Visibility 4000m Ceiling 800 Overcast Temperature 14C Dew Point 11C Altimeter 1011 Mb ILS RWY 23 R.

EGLL Wind 260/ I5 Visibility 2000m Ceiling 500 Overcast Temperature 10C Dew Point 09 Altimeter 1011 Mb ILS RWY 27 R.

CLEARANCE

Pakistan 777 is cleared to Manchester (EGCC) BROOKMANSPARK SEVEN FOXTROT (BPK 7F) departure. Departure frequency 118.82, Squawk 1777.

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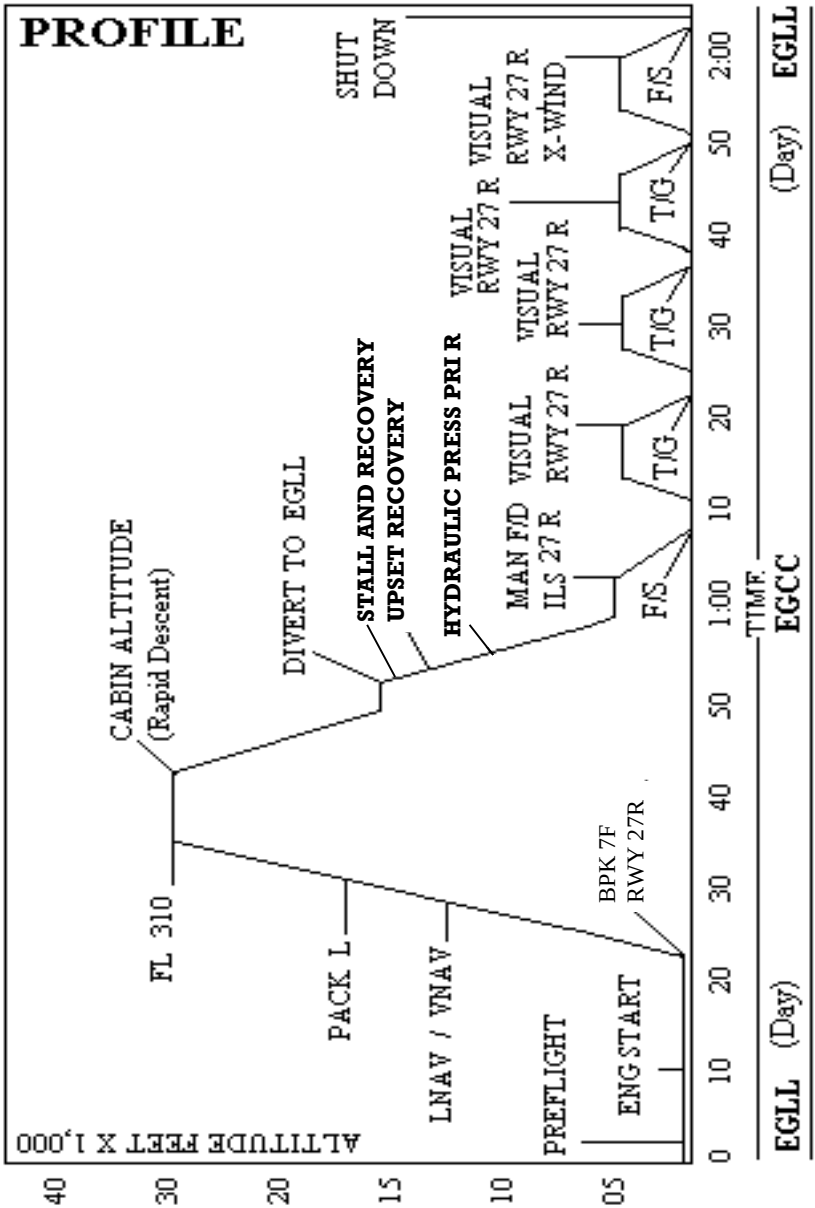
PROFILE
ALTITUDE FEET X 1,000
40
30
20
15
10
05
EGLL (Day)
0
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20
30
40
50
1:00
10
20
30
40
50
2:00
TIME
EGCC
(Day)
EGLL
PREFLIGHT
ENG START
LNAV / VNAV
PACK L
FL 310
BPK 7F
RWY 27R
CABIN ALTITUDE
(Rapid Descent)
DIVERT TO EGLL
STALL AND RECOVERY
UPSET RECOVERY
HYDRAULIC PRESS PRI R
MAN F/D
ILS 27 R
VISUAL
RWY 27 R
F/S
T/G
T/G
VISUAL
RWY 27 R
VISUAL
RWY 27 R
T/G
VISUAL
RWY 27 R
X-WIND
F/S
SHUT
DOWN

PREFLIGHT	**REFERENCE**
Normal Procedures	FCOM NP.21, FCTM
ENGINE START	**REFERENCE**
Normal Procedures	FCOM NP.21
TAXI-OUT and TAKE OFF	**REFERENCE**
Normal Procedures	FCOM NP.21, FCTM
CLIMB	**REFERENCE**
LNAV and VNAV	FCOM NP.21, FCTM
PACK L	QRH 2.14
CRUISE	**REFERENCE**
Normal Procedures	FCTM, FCOM NP 21
Econ Cruise at FL 310	
CABIN ALTITUDE/rapid descent	FCOM, FCTM
EICAS message and flight check indications	
Use of autopilot	
Rapid descent to lowest safe altitude, or 10,000 feet	
Level-off procedures	
AIRWORK	
Stall and recovery	QRH, FCTM
Upset recovery training	FCTM 7
DESCENT	**REFERENCE**
LNAV/VNAV descent profile	FCOM 11
Descent Planning (FMC)	FCOM 11
Divert to EGLL	
FMC New destination (Rte page)	FCOM 11
HYD PRESS PR1 R	FCOM 13.3
APPROACH and LANDING	**REFERENCE**
Manual, F/D, ILS approach RWY 27 R	
Full stop landing	FCOM NP.21, FCTM
FMC – Approach selection	FCOM 11,
Intercept course to	FCOM 11
Nav Radios	FCOM 11
ILS auto tune	

	REFERENCE
Standard Callouts	FCTM
Flare and touchdown	
Reversing techniques	
TAKE OFF (ceiling 2000ft o/c)	**REFERENCE**
Normal Procedures	FCOM NP.21, FCTM
APPROACH and LANDING	**REFERENCE**
Visual traffic pattern RWY 27 R	FCOM NP.21
Touch & go landing	FCTM
Pattern altitude/timing	
Landing gear/Flaps extension	
PAP1/VAS1	
Map runway Display	
Trend Vector	
APPROACH and LANDING	**REFERENCE**
Visual traffic pattern RWY 27 R	FCOM NP.21
Touch & go landing	FCTM
Normal Procedures	
APPROACH and LANDING	**REFERENCE**
Visual traffic pattern RWY 27 R	FCOM NP.21
Touch & go landing	FCTM
Normal Procedures	
APPROACH and LANDING	**REFERENCE**
Visual traffic pattern RWY 27 R	
Crosswind, full stop landing	FCOM NP.21, FCTM
Normal Procedures	
Crosswind	FCTM
TAXI-IN and SHUTDOWN	**REFERENCE**
Normal Procedures	FCOM NP.21

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DAY SUMMARY

This Day is a local flight at Manchester (EGCC). Normal procedures and selected non-normal will be practiced. Emphasis will be on rejected takeoff exercises, non-ILS approaches and the introduction of engine inoperative characteristics. Non-ILS instrument approaches will be accomplished using VNAV unless operators require the use of V/S. For operators using VNAV, at least one non-ILS instrument approach will be accomplished using V/S to demonstrate the capability in case VNAV is not available.

Thrust limit and flap setting has to be calculated through TOGW analysis chart and inserted in FMS for optimum performance. The method is given in the SOP.

DAY OBJECTIVES

- Integrate selected normal and non-normal procedures.
- Initiate practice of rejected and crosswind takeoffs, engine-out procedures, and raw data ILS, VOR and circling approaches.
- Apply Crew Resource Management attributes while practicing selected normal and non-normal procedures.
- Improve skill level of previous training objectives.
- Demonstrate required level of proficiency in preflight, taxi-out, normal takeoff, raw data ILS, normal landing, main gear steering, engine-out landing (TAC on), fire, engine fire, ILS approach with engine noperative (TAC on), Missed approach with engine inoperative (TAC on), and engine inoperative Visual traffic pattern and manual landing (TAC on).

(*) Denotes proficiency item.

ROUTE OF FLIGHT

ORIGIN	Manchester (EGCC) RWY 23 R Gate ……..
ROUTE	SONEX DIRECT MCT VOR (Local Flying)
DEPARTURE	SONEX ONE ROMEO (SONE 1R)
DESTINATION	Manchester (EGCC)
FLIGHT NUMBER	PIA777

PERFORMANCE

GRWT	205,000 KGS	FLAPS	OPT
FUEL	20,000 KG	CG	23%
ZFW	185,000 KGS	WIND	140/10
RESERVES	5,500 KGS	SLOPE	0
CRZ ALT	5,000’	EO ACCEL HT	1,000’
COST INDEX	180	ACCEL HT	3,000’
THRUST LIM	AS REQUIRD	THR REDUCTION	1000’

WEATHER

EGCC Wind 140/10 Visibility 2000m Rain Ceiling 500 Overcast Temperature 15C Dew Point 14 C Altimeter 1015 Mb ILS RWY 23R.

CLEARANCE

Pakistan777 is cleared Manchester Airport (EGCC) SONEX ONE ROMEO departure. Climb and maintain 5000ft (Local Flying). Departure frequency 136.57, Squawk 0600.

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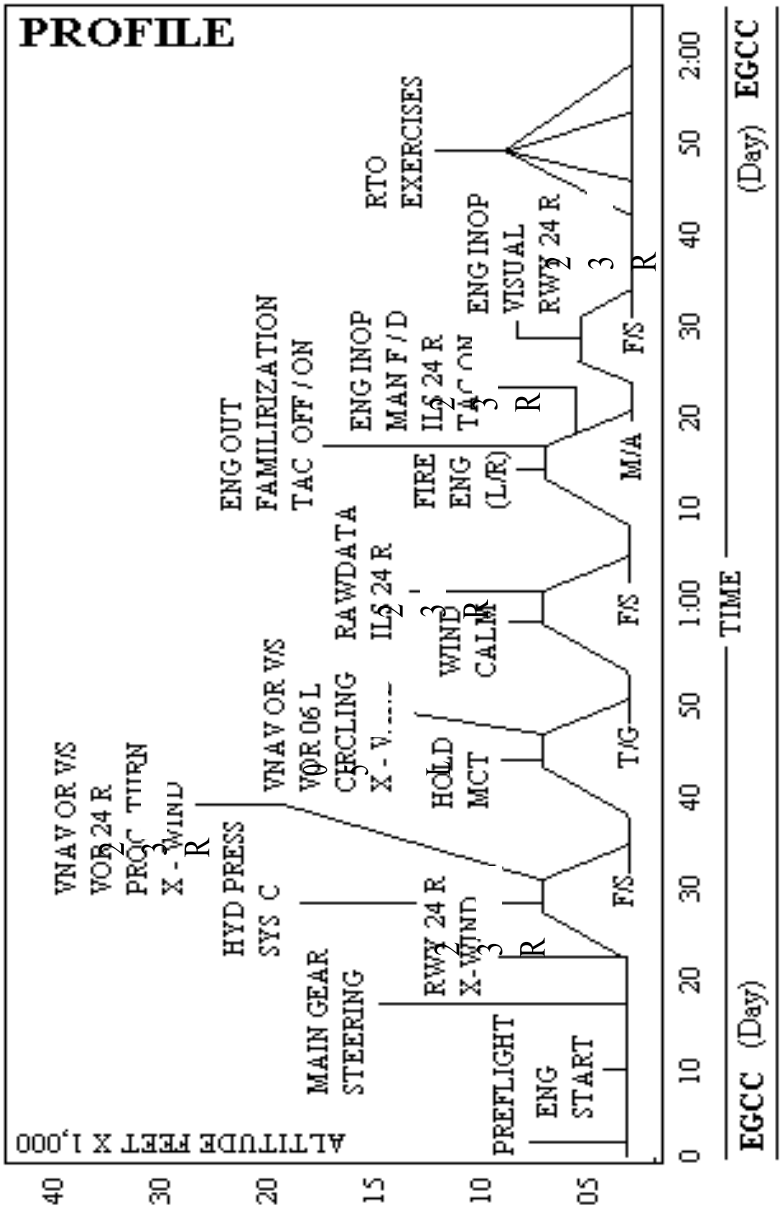

PROFILE
ALTITUDE FEET X 1,000
40
30
20
15
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05
PREFLIGHT
ENG START
MAIN GEAR STEERING
RWY 24 R X-WIND
HYD PRESS SYS C
VNAV OR V/S VOR 24 R PROC TURN X - WIND
VNAV OR V/S VOR 06 L CIRCLING X - V
HOLD MCT
RAWDATA ILS 24 R
WIND CALM
ENG OUT FAMILIRIZATION TAC OFF / ON
FIRE ENG (L/R)
ENG INOP MAN F / D ILS 24 R TAC ON
ENG INOP VISUAL RWY 24 R
RTO EXERCISES
F/S
T/G
F/S
M/A
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TIME
EGCC (Day)
EGCC (Day)

PREFLIGHT	**REFERENCE**
Normal Procedures	FCOM NP.21, FCTM
ENGINE START	**REFERENCE**
*Normal Procedures	FCOM NP.21
Engine anti-ice use	FCOM, SP.3
TAXI-OUT	**REFERENCE**
*Normal Procedures	FCOM NP.21, FCTM
*MAIN GEAR STEERING	QRH 14.9, FCOM
TAKE OFF	**REFERENCE**
Normal procedures	FCOM NP.21
Crosswind consideration	
Thrust reduction	FCOM, FCTM
Acceleration height	FCTM
Pattern airspeeds	FCTM
APPROACH and LANDING	**REFERENCE**
HYD PRESS SYS C	QRH 13.4
Hydraulic System loss/leak	
Review checklist effect of lost components	
VOR approach RWY 23 R	FCOM NP.21, SP.4,
With procedure turn, full stop landing	FCTM
VNAV or V/S as per operator procedures	
NON PRECISION APPROACH Procedure – VNAV	FCOM SP.4,FCTM
Flight Pattern	FCOM NP.21,FCTM
Use of autopilot recommended	
Fly off from FAF	
No waypoint modifications	
Flap configuration and speeds	FCTM
Pacing	
Use of speed intervention	

REFERENCE

LNAV and VNAV use
One of the following required for VNAV use;
Appropriate path with MAP at or before runway threshold Glide path angle published on chart and/or legs page
Published VNAV DA (H)
FMCS certified for instrument approach navigation with radio or GPS
Updating. RNP vs. ANP-RNP manual entry (0.3 for GPS).
FMA annunciations
Discuss "on approach" logic FCOM 11
Use of MDA(H) versus DA(H) FCTM 5

If DA (H) is not published, the DA (H) may be Considered to the equivalent Of the currently applicable published MDA (H) provided the principal Operations inspector grants this authorization.
If required to use MDA (H) for the approach Minimum altitude, the barometric minimums selector should be set at MDA+50 feet to ensure that, if an missed approach is initiated, descent below the MDA (H) does not occur during the missed approach.

Set MDA (H) or DA (H) on MCP
Raw data requirements FCTM 5
Set missed approach altitude FCOM SP.4, FCTM 5
Autopilot disconnect FCOM NP 21
Flight director procedures
Visual flight path below DA (H) or MDA (H)
Manual landing

NON-Precision Approach Procedures-V/S (For information only)	FCOM SP.4, FCTM
Flight Pattern	FCOM NP.21, FCTM
Use of autopilot recommended	
Fly off from FAF	
No waypoint modification	
Flap configuration and speeds	FCTM
Pacing	
LNAV use	
FMCS certified for instrument approach navigation with radio or GPS Updating. RNP vs. ANP-RNP manual entry (0.3 for GPS)	
FMA annunciation	
Discuss “on approach” logic	FCOM 11.31, FCTM 5
Set MDA (H) on MCP	
The barometric minimums selector should be set at MDA+50 feet To ensue that, if a missed approach is initiated, descent below the MDA (H) does not occur during the missed approach	
Raw data requirements	FCTM
Path Guidance Techniques	FCOM SP.4, FCTM
Monitor the VNAV path deviation indication	
Use the altitude range is at step down fix or VDP 300 fee per NM altitude	
Set missed approach altitude	FCTM
Autopilot disconnect	
Flight director procedures	
Visual flight path below MDA (H)	
Manual landing	

TAKE OFF	**REFERENCE**
Normal Procedures	FCOM NP.21,FCTM
Climb to pattern altitude	
APPROACH and LANDING	
Holding MCT	FCOM 11.43, FCTM
Holding entry	
Next hold	
Holding speed	
Exiting methods	
VOR approach RWY 23 R	
Circle to land 05 L	FCOM 11.43, FCTM
VNAV or V/S per operator procedures	
Non-Precision Circle Approach Procedures-VNAV	FCOM SP.4, FCTM
Flight Pattern	FCOM NP 21, FCTM
Use of autopilot recommended	
Fly off from FAF	
No waypoint modifications	
Flap configuration and speed	FCTM
Use of speed intervention	
LNAV and VNAV use	
One of the following required for VNAV use:	
Appropriate path with MAP at or before runway threshold glide path angle published on chart and/or legs page	
Published VNAV DA (H)	
FMCS certified for instrument approach navigation with radio or GPS updating RNP vs. ANP-RNP manual entry (0.3 for GPS).	
Discuss “on approach” logic	FCOM 11
Set MDA (H) on MCP	
For a circling approach, set barometric minimum selector to MDA (H) then set the MCP altitude to the next 10 foot increment above the MDA (H) and circle at MCP altitude.	
Raw data requirement	FCTM

Circling approach maneuvering — FCTM
- Maintain visual contact during circle
- Airspeed during maneuvering normally requires
- CAT D (FAA) – 141 to 165 Knots
- CAT C (ICAO) – 136 to 180 knots

Set missed approach altitude — FCOM SP.4, FCTM
Autopilot disconnect

Flight director procedures
Visual flight path below MDA (H)
* Touch & go landing — FCOM NP.21, FCTM

Non-Precision Circle Approach Procedures-V/S (for information only) — QRH, FCTM

Flight Pattern — QRH, FCTM
- Use of autopilot recommended
- Fly off from FAF
- No waypoint modification `
- Flap configuration and speed — FCTM
- Pacing
- LNAV use

FMCS certified for instrument approach navigation with radio or GPS updating. RNP vs. ANP-RNP manual entry (0.3 for GPS).

FMA annunciations
Discuss “on approach” logic — FCOM 11, FCTM 5
Set MDA (H) on MCP

For a circling approach, set barometric minimums selector to MDA (H) then set the MCP altitude to the next 100 foot increment above the MDA (H) and circle at MCP altitude.

Raw data requirements	FCTM
Path Guidance Techniques	FCTM
Monitor the VNAV path deviation indication	
Use the altitude range is at step-down fix or	
VDP 300 feet per NM altitude.	
Circle approach maneuvering	FCTM
Maintain visual contact during circle	
Airspeed during maneuvering normally requires	
CAT D (FAA) – 141 to 165 knots	
CAT C (ICAO) – 136 to 180 knots	
Set missed approach altitude	FCTM
Autopilot disconnect	
Flight director procedures	
Visual flight path below MDA (H)	
*Touch and go landing	FCOM NP.21, FCTM

APPROACH and LANDING	**REFERENCE**
RAW DATA, ILS approach RWY 23 R	FCOM NP.21,
Normal Procedures	FCOM NP.21, FCTM
* Manual Landing	

TAKE OFF	**REFERENCE**
* Normal takes off	FCOM NP.30, FCTM
Climb to pattern altitude	
FIRE ENGINE L, R	QRH 8.2

APPROACH and LANDING	**REFERENCE**
Engine out familiarization	FCTM
TAC off, TAC on	
*Manual, F/D, ILS approach RWY 23 R	FCOM NP.20, .30,
*Missed approach	
Engine inoperative	
TAC on	

APPROACH and LANDING	**REFERENCE**
* Visual traffic pattern RWY 23 R	FCOM
Full stop landing	FCTM
*Manual landing	
Engine inoperative	
TAC on	
Reversing techniques	
Braking considerations	

RTO EXERCISES	**REFERENCE**
RTO exercises	FCTM
Review RTO procedures/consideration	QRH
Brake cooling	PERFORMANCE IN FLT
Review conditions and data for each exercise	FCTM
CRM Consideration	
Situational Awareness	
Crosscheck available information	
Awareness of available decision time	
Distractions possible due to malfunctions	

DAY SUMMARY

This Day is a local flight at Manchester (EGCC). Normal procedures and selected non-normal will be practiced. Emphasis is on crosswind take offs and landing and non-precision approaches. VNAV or V/S will be used on non-ILS approaches per operator procedures.

Thrust limit and flap setting has to be calculated through TOGW analysis chart and inserted in FMS for optimum performance. The method is given in the SOP.

DAY OBJECTIVES

- Integrate selected normal and non-normal procedures.
- Initiate practice of engine fire on take off and localizer approaches.
- Apply Crew Resource Management attributes while practicing selected normal and non-normal procedures.
- Improve skill level of previous training objectives.

ROUTE OF FLIGHT

ORIGIN	Manchester (EGCC) RWY 23 R Gate ----------
ROUTE	SONEX DIRECT MCT VOR (Local Flying)
DEPARTURE	SONEX ONE ROMEO (SONE 1R)
DESTINATION	Manchester (EGCC)
FLIGHT NUMBER	PIA777

PERFORMANCE

GRWT	210,000 KGS	FLAPS	OPT
FUEL	20,000 KGS	CG	23%
ZFW	190,000 KGS	WIND	310/15
RESERVES	5,300 KGS	SLOPE	0
CRZ ALT	3,000’	EO ACCEL HT	1,000’
COST INDEX	180	ACCEL HT	3,000’
THRUST LIM	AS REQUIRED	THR REDUCTION	1,000’

WEATHER

EGCC Wind 310/15 Visibility 2000m Rain Ceiling 500 Overcast Temp 15C Dew Point 14 C Altimeter 1015 mb ILS RWY 23 R.

CLEARANCE

Pakistan777 is cleared to Manchester Airport (EGCC) SONEX ONE ROMEO (SONE 1R) Departure . Departure frequency 136.57, Squawk 1423.

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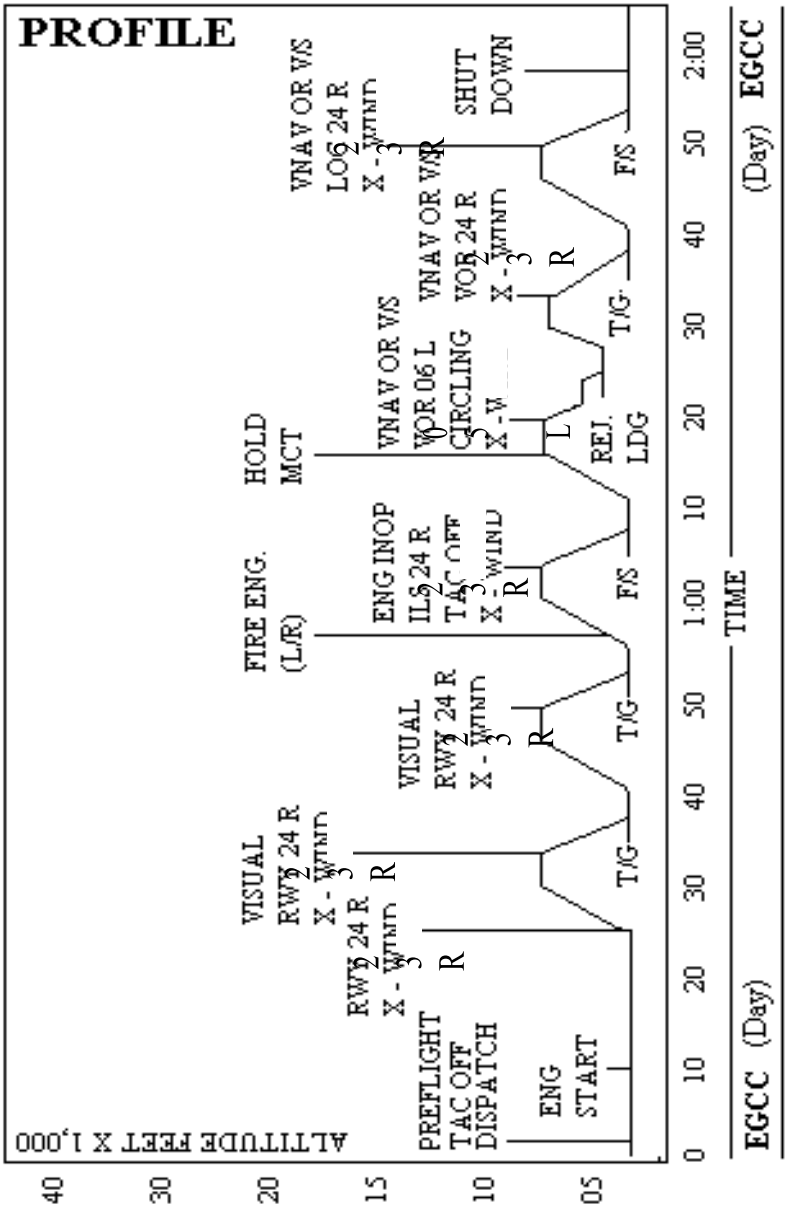

PROFILE
ALTITUDE FEET X 1,000
40
30
20
15
10
05
PREFLIGHT TAC OFF DISPATCH
ENG START
RWY 24 R X - WIND
VISUAL RWY 24 R X - WIND
VISUAL RWY 24 R X - WIND
FIRE ENG. (L/R)
ENG INOP ILS 24 R TAC OFF X - WIND
HOLD MCT
VNAV OR V/S VOR 06 L CIRCLING X - W
REJ. LDG
VNAV OR V/S VOR 24 R X - WIND
VNAV OR V/S LOC 24 R X - WIND
SHUT DOWN
T/G
F/S
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1:00
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2:00
TIME
EGCC (Day)
EGCC (Day)

PREFLIGHT	**REFERENCE**
Normal Procedures	FCOM NP.21, FCTM
Dispatch with thrust asymmetry compensator (TAC) inoperative	

ENGINE START	**REFERENCE**
Normal Procedures	FCOM NP.21

TAXI-OUT	**REFERENCE**
Normal Procedures	FCOM NP.21, FCTM

TAKE OFF	**REFERENCE**
Normal Procedures	FCOM NP.21
Crosswind	FCTM

APPROACH and LANDING	**REFERENCE**
Visual traffic pattern RWY 23 R	FCOM NP.20, .30,
Touch and go landing	FCTM
Crosswind	

APPROACH and LANDING	**REFERENCE**
Visual traffic pattern RWY 23 R	FCOM NP.21,
Touch and go landing	FCTM
Crosswind	

APPROACH and LANDING	**REFERNECE**
FIRE ENGINE (L/R) during climb	FCOM
ILS approach RWY 23 R, full stop landing	FCOM NP.21,FCTM
Engine inoperative	
Crosswind	FCTM
TAC off	

TAKE OFF	**REFERENCE**
Normal procedures	FCOM NP.21, FCTM

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APPROACH and LANDING	**REFERENCE**
Hold MCT	
VOR approach RWY 23 R circle to land	FCOM NP.21.
RWY 05 L rejected landing	FCTM
VNAV or V/S per operator procedures	
Crosswind landing	
Rejected landing procedures	FCTM

APPROACH and LANDING	**REFERENCE**
VOR approach RWY 23 R	FCOM NP.21,
Touch and go landing	FCTM
VNAV or V/S	
Crosswind landing	

APPROACH and LANDING	**REFERENCE**
LOC approach RWY 23 R	FCOM NP.21,
Full stop landing	FCTM
VNAV or V/S per operator procedures	
Crosswind landing	

TAXI-IN and SHUTDOWN	**REFERENCE**
Normal Procedures	FCOM NP.21

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DAY SUMMARY

This Day is a flight from Manchester (EGCC) to Karachi International Airport (OPKC) with an in-flight diversion required. Normal procedures and selected non-normal will be practiced. This flight emphasizes in-flight diversion considerations and procedures. Engine failure after VI characteristics and procedures will be introduced.

Thrust limit and flap setting has to be calculated through TOGW analysis chart and inserted in FMS for optimum performance. The method is given in the SOP.

DAY OBJECTIVES

- Integrate selected normal and non-normal procedures.
- Initiate practice of TCAS, dual engine failure/stall, fuel jettison, and engine failure on takeoff after V 1.
- Apply Crew Resource Management attributes while practicing selected normal and non-normal procedures.
- Improve skill level of previous training objectives.
- Demonstrate required level of proficiency in climb, engine EEC mode, dual engine failure/stall, engine in-flight start, fuel jettison, takeoff with engine failure after V 1 (TAC on), climb with engine inoperative (TAC on), APU fire and passenger evacuation.

(*) Denotes proficiency item.

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ROUTE OF FLIGHT

ORIGIN	Manchester (EGCC) RWY 23 R Gate ----------
ROUTE	SONEX UL975 DESIG *L603* DOLAS DIRECT ZDN G208 PG DOSTI
DEPARTURE	SONEX ONE ROMEO (SONE 1R)
DESTINATION	Karachi International Airport (OPKC)
ALTERNATE	OPNH ,ENROUTE ALT, EGLL, EDDF etc.
FLIGHT NUMBER	PIA777

PERFORMANCE

GRWT	280,000 KGS	FLAPS	OPT
FUEL	60,000 KGS	CG	26%
ZFW	220,000 KGS	WIND	140/15
RESERVES	6,500 KGS	SLOPE	0
CRZ ALT	FL 310	EO ACCEL HT	1,000’
COST INDEX	180	ACCEL HT	3,000’
THRUST LIM	AS REQUIRED	THR REDUCTION	1,000

WEATHER

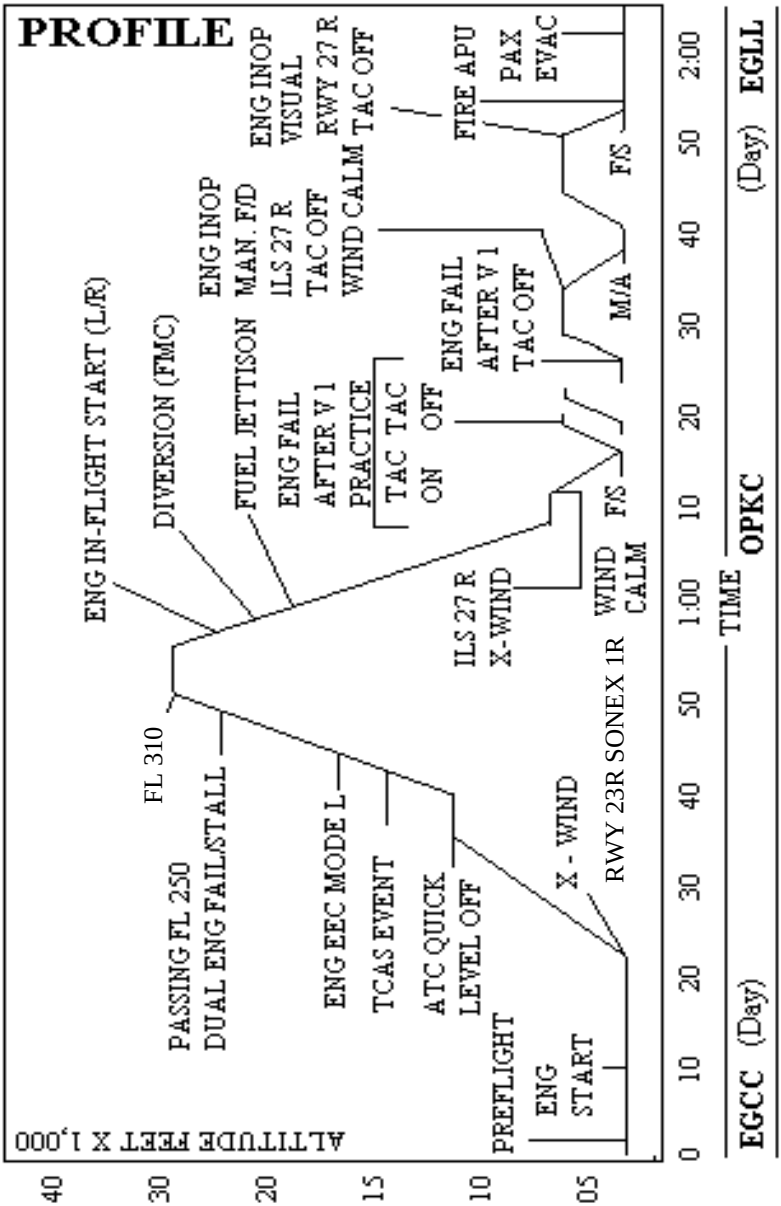
EGCC Wind 140/15 Visibility 550m Ceiling 2500 Broken 15000 Overcast Temperature 20C Dew Point 19 C Altimeter 1019Mb.

OPKC Wind 050/10 Visibility 10 km Scattered 5000’. Temperature 31°C / Dew Point 21º C Altimeter 1011 Mb.

EGLL Wind 270/10 Visibility 10 km Ceiling 1000 Broken, 2500 Overcast Temperature 14°C Dew Point 10°C Altimeter 1016Mb.

CLEARANCE

Pakistan777 is cleared to OPKC, SONEX ONE ROMEO (SONE 1R). Departure. Departure frequency 136.57, squawk 4234.


PROFILE
ENG IN-FLIGHT START (L/R)
DIVERSION (FMC)
FUEL JETTISON
ENG FAIL
AFTER V 1
PRACTICE
TAC TAC
ON OFF
ENG INOP
MAN. F/D
ILS 27 R
TAC OFF
WIND CALM
ENG INOP
VISUAL
RWY 27 R
TAC OFF
FIRE APU
PAX
EVAC
F/S
M/A
ENG FAIL
AFTER V 1
TAC OFF
F/S
WIND
CALM
ILS 27 R
X-WIND
FL 310
PASSING FL 250
DUAL ENG FAIL/STALL
ENG EEC MODE L
TCAS EVENT
ATC QUICK
LEVEL OFF
X - WIND
RWY 23R SONEX 1R
PREFLIGHT
ENG
START
ALTITUDE FEET X 1,000
40
30
20
15
10
05
0
10
20
30
40
50
1:00
10
20
30
40
50
2:00
TIME
EGCC (Day)
OPKC
(Day)
EGLL

PREFLIGHT	**REFERENCE**
Normal Procedures	FCOM NP.21, FCTM
ENGINE START	**REFERENCE**
Normal Procedures	FCOM NP.21
TAXI-OUT and TAKE OFF	**REFERENCE**
Normal Procedures	FCOM NP.21, FCTM
Crosswind takes off	FCTM
Heavy Weight take off	
Practice Take off abort with engine failure	QRH- BRAKE COOLING SCHEDULE
CLIMB	**REFERENCE**
*Normal Procedures	FCOM NP.21, FCTM
ATC Quick Level off	
Manual control versus MCP	
TCAS event	FCTM
*ENG EEC MODE L	QRH 7.12, FCOM
*DUAL ENG FAIL/STALL	QRH 7.2, FCTM 8.7
Flight Deck indications	
Drift down, if required	FCOM, FCTM
DESCENT	**REFERENCE**
One engine restarts during	
Dual Engine Fail/Stall checklist	QRH
*ENG IN-FLIGHT START L, R	QRH 7.22, FCTM 8.8
Second engine restarts	
FMC status after in-flight start	
FMC (diversion)	
CRM considerations	
Workload management	
Sequence tasks	
Avoid work overload and do not be hurried.	

	REFERENCE
Diversion	FCOM
*FUEL JETTISON	QRH 12.16
Level at 10,000 feet	FCTM 8.19
APPROACH and LANDING	**REFERENCE**
ILS approach RWY 27 R	FCOM NP.21,
Full stop landing	FCTM
Crosswind landing	
ENGINE FAILURE PRACTICE	**REFERENCE**
Engine failure practice (wind calm)	FCOM NP.21, FCTM
*Take off with engine failure after VI (TAC on)	
*Climb with engine failure (TAC on)	
Take off with **Eng Svr Damage/Sep L, R** after VI (TAC off)	QRH 7.8
Climb with engine failure (TAC off)	
TAKE OFF	**REFERENCE**
Engine Lim/Surge/ Stall after VI (TAC off)	QRH, FCTM
Engine failure indications	FCOM
Rudder required for directional control	
Rotation rate and target pitch attitude	
Flight director usage	
Slip/skid indicator	
APPROACH and LANDING	**REFERENCE**
Engine inoperative, manual F/D, missed approach (TAC off)	QRH 7, FCTM
Trim requirements	
Engine inoperative missed approach	
Rudder requirement	
LNAV	
VNAV/FLCH	
APPROACH and LANDING	**REFERENCE**
Engine inoperative, visual traffic pattern, RWY 27 R full stop landing (TAC off)	FCTM
Rudder trim	
Traffic pattern	
Zero trim	
Reverser technique	

TAXI-IN	**REFERENCE**
*FIRE APU	QRH 8.1
*PASSENGER EVACUATION	QRH BACK COVER
Passenger evacuation, procedure	FCTM
Emergency exits – selection and use	

CRM considerations

Communications – acquire information on airplane status
First Officer
Tower
Cabin staff
Resolve conflicting information
Advocate course of action and communicate to all involved.

DAY SUMMARY

This Day is local flight at Manchester airport (EGCC) beginning with night conditions and terminating during day light (Wind shear Training). The crew performs a limited preflight while the instructor stars the engines and configures the overhead panel. Normal procedures and selected non-normal will be practiced. Emphasis will be on hydraulic failures, flight control failures, and wind shear. VNAV users will practice V/S non-ILS approach procedures.

The manual F/D VOR procedure turn approach is annotated as a Proficiency Check Requirement (*). If not performed satisfactorily, it will be included in the Day 9 Evaluation flight profile.

Thrust limit and flap setting has to be calculated through TOGW analysis chart and inserted in FMS for optimum performance. The method is given in the SOP.

DAY OBJECTIVES

- Integrate selected normal and non-normal procedures.
- Initiate practice of hydraulic failure of two systems. Flaps/slats control failure, and wind shear exercise.
- Apply crew Resource Management attributes while practicing selected normal and non-normal procedures.
- Improve skill level of previous training objectives.
- Demonstrate required level of proficiency in take off with crosswind take off with slippery runway, night take off, take off with wind shear, climb with wind shear, wind shear on approach, manual F/D VOR approach, engine imperative traffic pattern and landing, hydraulic failure (R+C) system, and flaps/slats control failure.

(*) Denotes proficiency item.

ROUTE OF FLIGHT

ORIGIN	Manchester (EGCC) RWY 23R Gate ----------
ROUTE	SONEX DIRECT TO MCT VOR (Local Flying)
DEPARTURE	SONEX ONE ROMEO (SONE 1R)
DESTINATION	Manchester (EGCC)
FLIGHT NUMBER	PIA777

PERFORMANCE

GRWT	210,000 KGS	FLAPS	OPT/20
FUEL	20,000 KGS	CG	24%
ZFW	190,000 KGS	WIND	150/10
RESERVES	6,100 KGS	SLOPE	0
CRZ ALT	4,000’	EO ACCEL HT	1,000’
COST INDEX	180	ACCEL HT	3,000
THRUST LIM	AS REQUIRED	THR REDUCTION	1,000

WEATHER

EGCC Wind 150/10 Visibility 3000 m Light Snow Ceiling 600 Overcast Temperature 01C Dew Point 01C Altimeter 1012 mb ILS RWY 23 R. Braking action on taxiways and runways POOR / slush on taxiways.

CLEARANCE

Pakistan777 is cleared to Manchester Airport (EGCC) SONEX ONE ROMEO (SONE 1R) Departure. SONEX Direct MCT VOR. . Departure frequency 136.57, squawk 1777.

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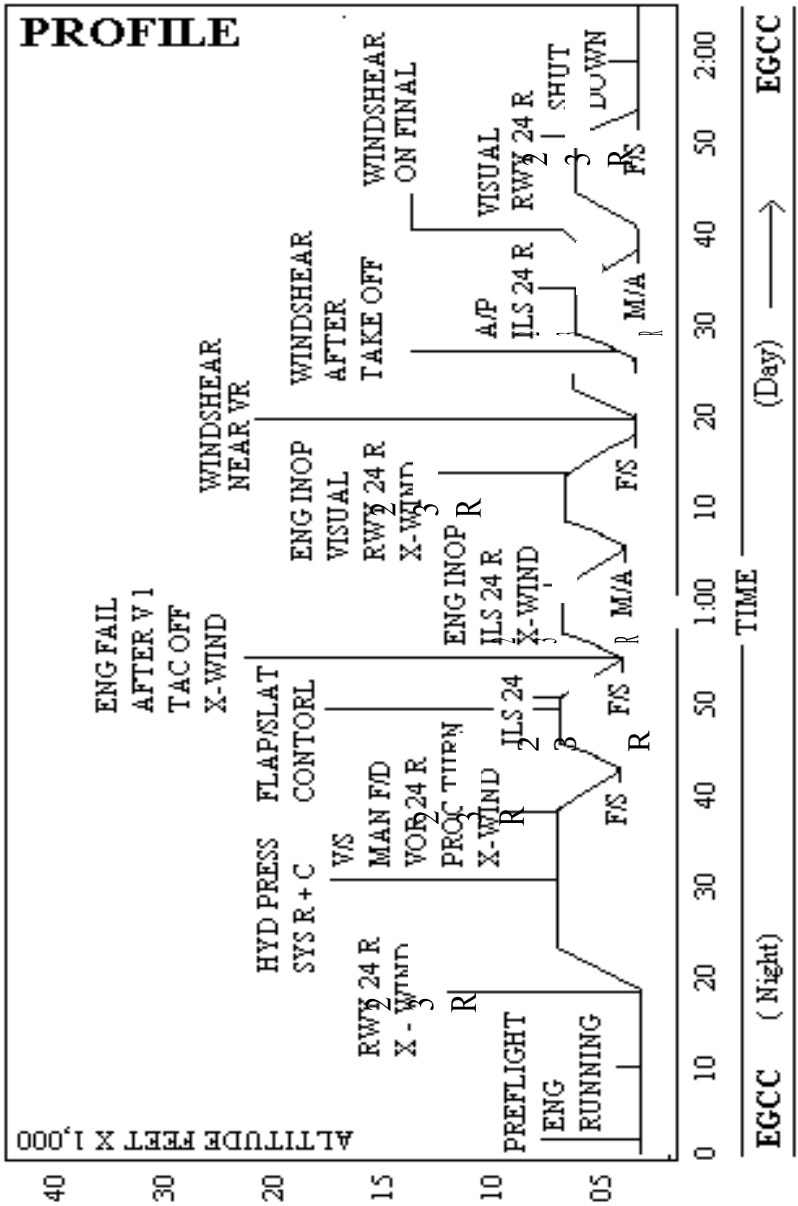
PROFILE
ALTITUDE FEET X 1,000
40
30
20
15
10
05
EGCC (Night)
0
10
20
30
40
50
1:00
10
20
30
40
50
2:00
TIME
(Day)
EGCC
PREFLIGHT
ENG RUNNING
RWY 24 R
X - WIND
HYD PRESS
SYS R + C
V/S
MAN F/D
VOR 24 R
PROC TURN
X-WIND
FLAPS/LAT CONTORL
ILS 24
F/S
ENG FAIL AFTER V 1 TAC OFF X-WIND
ENG INOP
ILS 24 R
X-WIND
M/A
WINDSHEAR NEAR VR
ENG INOP
VISUAL
RWY 24 R
X-WIND
WINDSHEAR AFTER TAKE OFF
A/P
ILS 24 R
VISUAL
RWY 24 R
WINDSHEAR ON FINAL
SHUT DOWN

PREFLIGHT	**REFERENCE**
Normal Procedures	
Program FMC, set trim, airspeeds and MCP panel	FCOM NP.21, FCTM
Accomplish checklist	
Set lighting	FCOM
Instructor will configure overhead panel and start engines	
De-icing requirements	FCOM SP.3, FCTM

ENGINE START	**REFERENCE**
Engine running	
Engine anti-ice	FCOM, SP.3

TAXI-OUT	**REFERENCE**
Normal Procedures	
Taxi in adverse weather	FCTM
Engine anti-ice/run-up	FCOM SP.3

TAKE OFF	**REFERENCE**
* Crosswind take off	FCTM
* Take off on slippery runway	FCOM SP 16.1
* Night take off	
Adverse runway conditions take off	

APPROACH and LANDING	**REFERENCE**
* HYD PRESS SYS R+C	QRH 13.18, FCOM
Loss of Right and Center Hydraulic Systems	
Review FCOM for affected components	
Slats hydraulic operations	
Flaps hydraulic operations	
Main landing gear hydraulic operation	
Auto speed brake	

	REFERENCE
Main gear steering	
Auto brake	
Normal and Alternate brakes	
Right thrust reverser	
Additional time required for flap/slat extension	
Reduced flight control capability	
Flaps 20 and VREF 30+20	
(ensures go around performance)	
Crosswind limit 20 knots	
*Manual, F/D, VOR approach RWY 23 R	
Procedure turn, full stop landing	FCTM
Non precision Approach Procedures - V/S	FCOM SP.4, FCTM
Flight pattern	FCOM NP.21, FCTM
Use of autopilot recommended	
Fly off from FAF	
No waypoint modifications	
Flap configuration and speeds	FCTM
Pacing	
LNAV use	
FMC certified for instrument approach navigation with radio or GPS Updating. RNP Vs ANP-RNP manual entry (0.3 for GPS).	
FMA annunciations	
Discuss “on approach” logic	FCOM 11
Set MDA(H) on MCP	
The barometric minimums selector should be set at MDA+50 feet to ensure that, if a missed approach is initiated, descent below the MDA(H) does not occur during the missed approach.	
Raw data requirement	FCTM
Path Guidance Techniques	FCOM SP.4, FCTM

	REFERENCE
Monitor the VNAV path deviation indication	
Use the altitude range arc at step-down fix or VDP 300 feet per NM altitudes	
Set missed approach altitude	FCTM
Autopilot disconnect	
Flight director procedures	
Visual flight path below MDA (H)	
Set minimums to LOC (G/S OUT)	
Manual landing, flaps 20	
CRM considerations	
Promote group climate	
Promote crew participation and interaction	
Involve cabin staff	
Problem solving process	

TAKE OFF

Normal takes off	
Retract flaps, climb to 4,000 feet	

APPROACH and LANDING	**REFERENCE**
*FLAP/SLAT CONTROL	QRH 9.8, FCOM
Use of alternate Flap operation	
flap 20 landing, VREF 20	
Radar vector ILS approach RWY 23 R	
Full stop landing	FCTM

TAKE OFF	**REFERENCE**
Take off, engine failure after VI	FCOM NNM.2, FCTM
ENG FAIL L/R – after VI	FCOM, QRH
TAC off – Directional control	
Crosswind conditions	FCTM

APPROACH and LANDING

Engine inop, radar vector, ILS approach	
RWY 23 R missed approach	FCTM
Crosswind conditions	FCTM

APPROACH and LANDING	**REFERENCE**
*Engine inop. Visual traffic pattern RWY 23 R	
full stop landing	FCTM
Crosswind conditions	FCTM

WINDSHEAR TRAINING	**REFERENCE**
Wind shear encounter on the runway and after liftoff	FCOM, FCTM, QRH
Avoidance, precaution and recovery.	
Wind shear recovery procedure	FCOM, FCTM, QRH
Wind shear indication	FCOM
Use of pitch attitude and thrust	
To control flight path versus airspeed	
Do not change configuration	
Respecting stick shaker	
Go-around considerations	
Use of the autopilot/flight director	
Crew coordination	
Report wind shear activity to ATC	
*Take off wind shear near VR (practice)	

TAKE OFF	**REFERENCE**
*Take off, wind shear after liftoff (Continue take off)	QRH, FCTM

APPROACH and LANDING	
* Autopilot, ILS approach RWY 23 R	
Wind shear on final, missed approach	FCTM
* Missed approach	
Wind shear escape maneuver, automatic	QRH, FCTM
Monitor system performance.	

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APPROACH and LANDING	**REFERENCE**
Visual traffic pattern RWY 23 R Normal manual landing, full stop	FCOM NP.21, FCTM

TAXI-IN and SHUTDOWN	**REFERENCE**
Normal Procedures.	

DAY SUMMARY

This Day is a flight from London Heathrow (EGLL) to Manchester (EGCC) with a diversion required. The crew performs a limited preflight while the instructor starts the engines and configures the overhead panel. Normal procedures and selected non-normal will be practiced. Emphasis will be on a LOFT exercise followed by a diversion. Pilot incapacitation after missed approach at EGCC , A RECOGNITION IS REQUIRED BY REMAINING PILOT . DETAIL IS MENTION IN FCTM 1.39
Practice of Heavy weight TAKEOFF with engine fail at V1 and heavy WT both engine operative landing will be practiced later in the session. A TOGW of 260000kgs will be used. (Chapter 21 page 6)

Thrust limit and flap setting has to be calculated through TOGW analysis chart and inserted in FMS for optimum performance. The method is given in the SOP.

DAY OBJECTIVES

- Integrate selected normal and non-normal procedures.

- Initiate practice of electrical malfunction, Forced landing, cargo fire, and engine low oil pressure, PILOT INCAPACITATION .Heavy wt takeoff and landing

- Apply Crew Resource Management attributes while practicing selected normal and non-normal procedures.

- Improve skill level of previous training objectives.

ROUTE OF FLIGHT

ORIGIN	London Heathrow (EGLL) RWY 27 R Gate ----------
ROUTE	BPK UN601 POL
DEPARTURE	BROOKMANSPARK SEVEN FOXTROT (BPK 7F)
DESTINATION	Manchester (EGCC)
ALTERNATE	Birmingham (EGBB)
FLIGHT NUMBER	PIA777

PERFORMANCE

GRWT	240,000 KGS	FLAPS	OPT
FUEL	30,000 KGS	CG	24%
ZFW	210,000 KGS	WIND	180º/ 15
RESERVES	6,100 KGS	SLOPE	0
CRZ ALT	16,000’	EO ACCEL HT	1,000’
COST INDEX	180	ACCEL HT	3,000’
THRUST LIM	AS REQUIRED	THR REDUCTION	1,000

WEATHER

EGLL Wind 180/15 Visibility 3 km Ceiling 800 Broken 15,000 Overcast Temperature 10 C Dew Point 08 Altimeter 1015 Mb ILS RWY 27 R.

EGCC Wind calm Visibility 1 km Ceiling 300 Overcast Temperature 10 C Dew Point 09C Altimeter 1013 Mb.

EGBB Wind 330/10 Visibility 5 km. Scattered 10,000. Temperature 10 C. Dew point 02. Altimeter 1010 Mb ILS RWY 33.

CLEARANCE

Pakistan 777 is cleared to Manchester Airport (EGCC) BROOKMANSPARK SEVEN FOXTROT (BPK 7F) departure, squawk 4737. Departure frequency 118.82.

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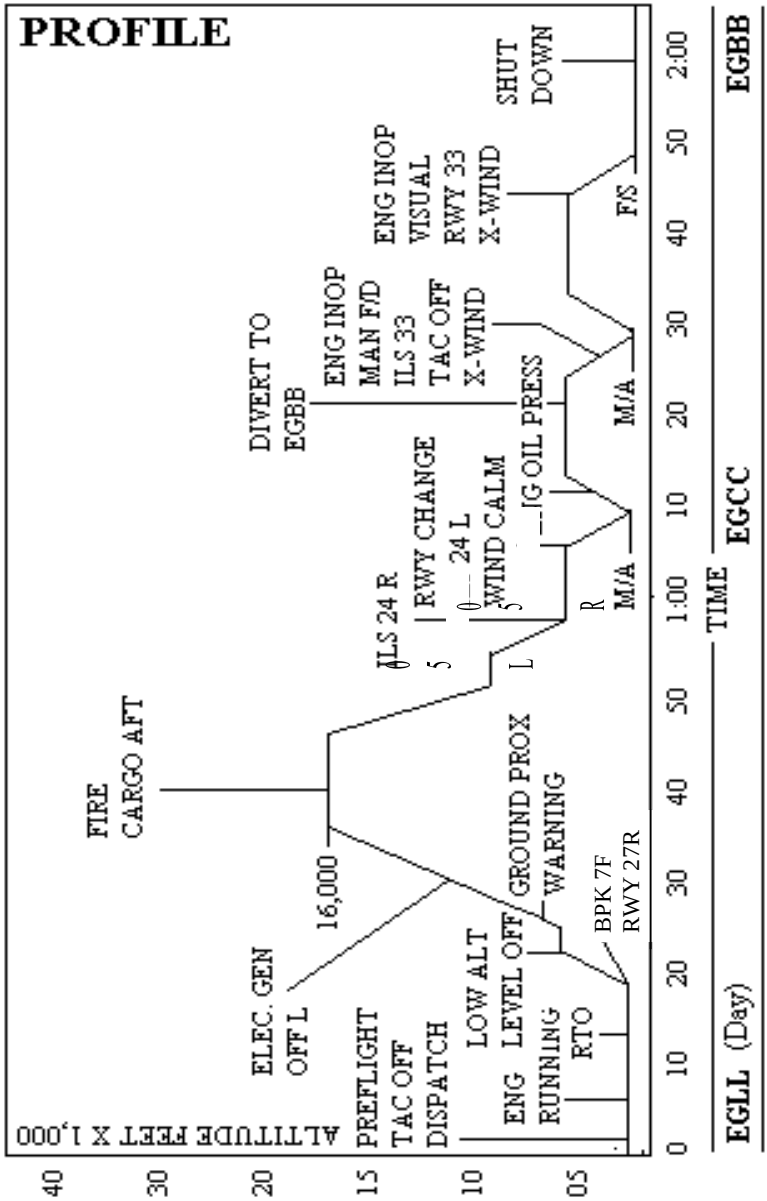
PROFILE
ALTITUDE FEET X 1,000
40
30
20
15
10
05
PREFLIGHT
TAC OFF
DISPATCH
ELEC. GEN
OFF L
16,000
FIRE
CARGO AFT
LOW ALT
ENG LEVEL OFF
RUNNING
RTO
GROUND PROX
WARNING
BPK 7F
RWY 27R
ILS 24 R
5
L
RWY CHANGE
24 L
WIND CALM
IG OIL PRESS
R
M/A
DIVERT TO
EGBB
ENG INOP
MAN F/D
ILS 33
TAC OFF
X-WIND
M/A
ENG INOP
VISUAL
RWY 33
X-WIND
F/S
SHUT
DOWN
0
10
20
30
40
50
1:00
10
20
30
40
50
2:00
TIME
EGLL (Day)
EGCC
EGBB

PREFLIGHT	**REFERENCE**
Normal Procedures	
Program FMC, set trim, airspeeds, and MCP Panel	FCOM NP.21, FCTM
Intercept course from	FCOM
Accomplish checklists	
Dispatch with thrust asymmetry Compensator (TAC) inoperative	
Instructor will configure overhead panel and start engines	

ENGINE START	**REFERENCE**
Engines running	FCOM NP.21

TAXI-OUT and TAKE OFF	**REFERENCE**
Rejected take off procedure	QRH/FCTM
Normal procedures	FCOM NP.21, .30,FCTM
RWY 27R	
Crosswind take off	
LNAV at 400’	

CLIMB	**REFERENCE**
VNAV	FCOM NP.21, FCTM
Low altitude level-off	FCTM
Ground Prox Warning	QRH, FCOM, FCTM
ELEC GEN OFF L	QRH 6.5, FCOM

CRUISE	**REFERENCE**
Normal Procedures	FCOM NP. 21/FCTM
Dual Eng Fail/Stall	QRH 7.2
Forced landing	

TAKE OFF	**REFERENCE**
Normal procedure	FCOM NP21

CRUISE	
FIRE CARGO AFT	QRH 8.12

DESCENT	**REFERENCE**
Normal Procedures	FCOM NP.21,FCTM

APPROACH and LANDING	**REFERENCE**
ILS approach RWY 05L TAC off After localize and/or glides lope capture Change to ILS RWY 05R	FCOM NP.21, FCTM
MCP Procedures The approach mode can be disengaged: After localizer and/or glide slope are captured, by pushing the approach switch a second time above 1,500 feet radio altitude (AFDS reverts to HDG HLD and V/S)	FCOM
After localizer and/or glide slope are capture, by engaging the TO/GA mode or disengaging the autopilot and turning both flight director switches off: FMC procedures Reselect new approach ILS RWY 05R ILS approach RWY 05R missed approach	

PILOT INCAPACITATION	**FCTM 1.39**
ENG OIL PRESS L, R Divert to EGBB	QRH 7.30

APPROACH and LANDING	**REFERENCE**
Engine inop, ILS approach RWY 33 Missed approach TAC off Crosswind	FCOM NP.21/FCTM FCTM

APPROACH and LANDING	**REFERENCE**
Engine inop, visual traffic pattern RWY 33 full stop landing TAC off Crosswind landing	FCOM NP.21/QRH FCTM

TAXI-IN and SHUTDOWN	**REFERENCE**
Normal Procedures	FCOM NP.21

HEAVY WT TRAINING REQUIREMENT ,TOGW 260,000 KGS

1. TAKE OFF	
Engine fails after V1 TAC OFF	FCTM ,FCOM NP 30,
Rudder required for directional control	
Rotation rate and target pitch altitude	
FD usage	
ENG IN FLIGHT START.	QRH 7.22, FCOM
2. APPROACH and LANDING	FCOM NP 20, 30
Heavy WT Both Engine operative	FCTM 6.14, QRH 0.4
ILS approach	
Missed approach from DH	
3. VISUAL and TRAFFIC PATTERN	FCOM
Normal manual landings	

DAY SUMMARY

This Day is a flight from Manchester (EGCC) to London Heathrow (EGLL). The crew performs a complete preflight. Normal procedures and selected non-normal will be practiced. This flight is a review and proficiency enhancement flight in preparation for the Check Ride (Line Oriented Evaluation). VNAV or V/S will be used on non-ILS approaches per operator procedures.

Thrust limit and flap setting has to be calculated through TOGW analysis chart and inserted in FMS for optimum performance. The method is given in the SOP.

DAY OBJECTIVES

- Integrate selected normal and non-normal procedures.
- Initiate practice of electrical AC bus failure and wheel well fire.
- Apply Crew Resource Management attributes while practicing selected normal and non-normal procedures.
- Improve skill level of previous training objectives.
- *Demonstrate required level of proficiency in rejected takeoff, takeoff with crosswind and low ceiling and visibility, electric AC bus failure, smoke/fumes removal, wheel well fire, TCAS resolution advisory, loss of cabin altitude, rapid descent, unusual attitudes, holding, VOR approach, circling approach, rejected landing, ILS automatic landing, takeoff with engine failure after V 1 (TAC off), engine inoperative climb (TAC off), manual flight director engine inoperative ILS approach (TAC off), and engine inoperative missed approach (TAC off).

(*) Denotes proficiency item.

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ROUTE OF FLIGHT

ORIGIN	Manchester (EGCC) RWY 23 R Gate ----------
ROUTE	SONEX UL975 DESIG *L603* DOLAS DIRECT LAM
DEPARTURE	SONEX ONE ROMEO (SONE 1R)
DESTINATION	London Heathrow (EGLL)
ALTERNATE	Manchester (EGCC)
FLIGHT NUMBER	PIA777

PERFORMANCE

GRWT	210,000 KGS	FLAPS	Opt,15
FUEL	20,000 KGS	CG	23%
ZFW	190,000 KGS	WIND	320/15
RESERVES	5,400 KGS	SLOPE	0
CRZ ALT	FL 290	EO ACCEL HT	1,000’
COST INDEX	180	ACCEL HT	3,000’
THRUST LIM	AS REQUIRD	THR REDUCTION	1,000

WEATHER

EGCC Wind 320/15 Visibility 3000m Ceiling 1200 Overcast Temperature 09C Dew Point 07 C Altimeter 1010 Mb ILS RWY 23 R.

EGLL Wind 270/10 Visibility 4 km Ceiling 800 Overcast Temperatures I0 C Dew Point 07 C Altimeter 1011 Mb VOR RWY 27 R.

CLEARANCE

Pakistan 777 is cleared to London Heathrow Airport (EGLL). SONEX ONE ROMEO (SONE 1R) departure. Departure frequency 136.575, squawk 4737.

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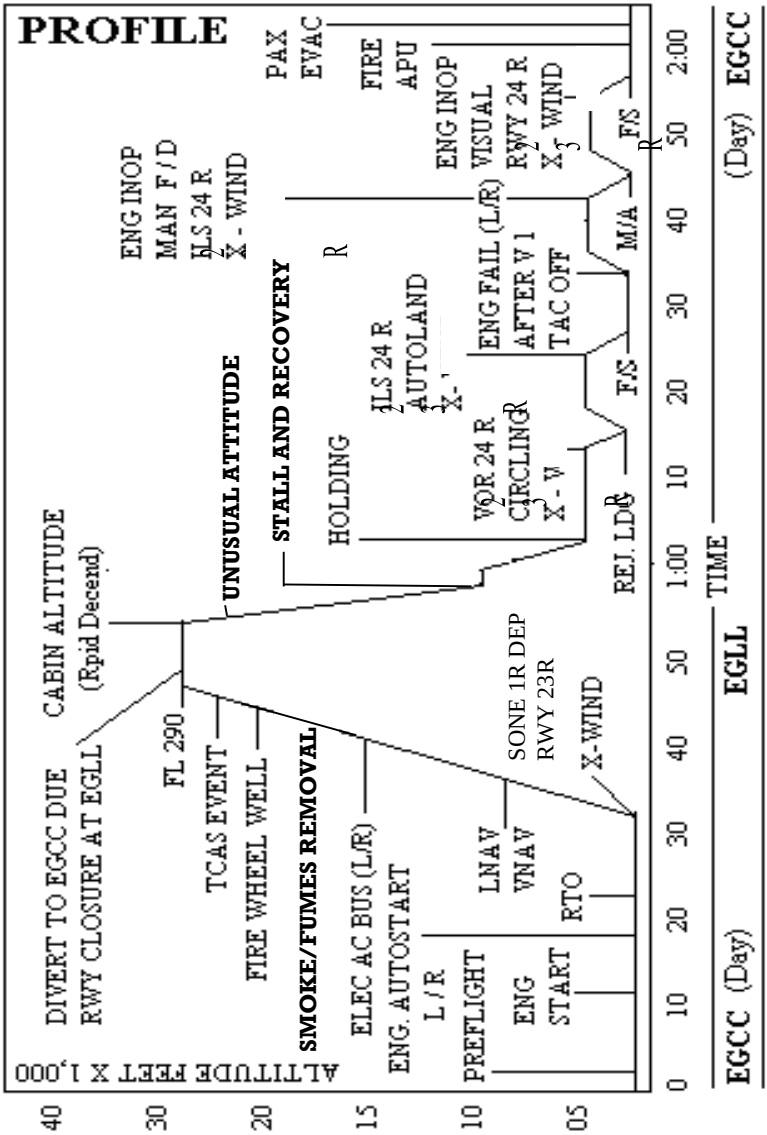
PROFILE
ALTITUDE FEET X 1,000
40
30
20
15
10
05
0
10
20
30
40
50
1:00
10
20
30
40
50
2:00
EGCC (Day)
EGLL
TIME
(Day) EGCC
DIVERT TO EGCC DUE
RWY CLOSURE AT EGLL
CABIN ALTITUDE
(Rpid Decend)
FL 290
TCAS EVENT
FIRE WHEEL WELL
SMOKE/FUMES REMOVAL
ELEC AC BUS (L/R)
ENG. AUTOSTART
L / R
PREFLIGHT
ENG
START
LNAV
VNAV
RTO
SONE 1R DEP
RWY 23R
X-WIND
UNUSUAL ATTITUDE
STALL AND RECOVERY
HOLDING
R
ILS 24 R
AUTOLAND
VOR 24 R
CIRCLING
X - W
REJ. LDG
F/S
ENG FAIL (L/R)
AFTER V 1
TAC OFF
M/A
ENG INOP
MAN F / D
ILS 24 R
X - WIND
PAX
EVAC
FIRE
APU
ENG INOP
VISUAL
RWY 24 R
X - WIND
F/S

PRE-FLIGHT	**REFERENCE**
Normal Procedures	FCOM NP.21, FCTM
Departure/take off alternate	

ENGINE START	**REFERENCE**
Normal procedures	FCOM NP.21
ENG AUTOSTART L, R	QRH 7.3, FCOM
Engine anti-ice	FCOM, SP3

TAXI-OUT and TAKE OFF	**REFERENCE**
Normal Procedures	FCOM NP.21, FCTM
Engine anti-ice	FCOM SP.3, FCTM
Crosswind	
*Rejected Take off procedures	
*Take off with low visibility and ceiling	FCTM

CLIMB	**REFERENCE**
Normal Procedures	FCOM NP.21, FCTM
LNAV/VNAV	
*ELEC AC BUS L, R	QRH 6.1
*SMOKE/FUMES REMOVAL	QRH 8.24
*FIRE WHEEL WELL	QRH 8.17
TCAS event	FCOM, QRH MAN 1.6, FCTM

CRUISE	**REFERENCE**
Normal procedures	FCOM NP.21, FCTM
Divert to Manchester due London	
RWY closure	
* CABIN ALTITUDE/ rapid descent	QRH 2.1, FCTM
EICAS message and flight deck indications	
Use of autopilot	
Rapid descent to lowest safe altitude, or 10,000 feet	
Level-off procedures	
CRM Considerations – Captains authority	
Emergency authority	
Minimize risk	
Control airplane, crew, and passengers.	

DESCENT	**REFERENCE**
*Unusual Attitude (nose high/nose low)	QRH, FCTM
Level off FL100	
Stall and recovery	FCTM, QRH

APPROACH and LANDING	**REFERENCE**
***** Hold MCT	FCOM, FCTM
* VOR approach RWY 23 R circle to land	
RWY 05 L rejected landing	FCTM
Crosswind landing	
* Rejected landing procedure	FCTM

APPROACH and LANDING	**REFERENCE**
ILS approach RWY 23 R	FCOM NP.21
* Auto land	FCTM
Crosswind landing	

TAKE OFF	**REFERENCE**
Take off, engine failure after VI	FCOM, FCTM
* ENG FAIL L, R	QRH 7.14,
Crosswind	
TAC off	
* Climb engine inoperative	FCTM

APPROACH & LANDING	**REFERENCE**
* Manual F/D, ILS approach	FCOM NP.21
RWY 23 R	FCTM
Engine Inop	
Crosswind	
TAC off	
* Missed approach	

APPROACH and LANDING	**REFERENCE**
Visual traffic pattern RWY 23 R	FCOM NP.21
Full stop landing	FCTM
Engine inop	
Crosswind landing	
TAC off	
Engine inoperative landing	

TAXI-IN and SHUTDOWN	**REFERENCE**
Normal Procedures	FCOM NP.21
*FIRE APU	QRH 8.1, FCOM
*PASSENGER EVACUATION	QRH back cover
Passenger evacuation, procedure	FCTM 8.12
Emergency exits – selection and use	
CRM considerations	
Communications – acquire information on airplane status	
First Officer	
Tower	
Cabin staff	
Resolve conflicting information	
Advocate course of action and communicate to all involved.	

EVALUATION SUMMARY

The simulator evaluation flight profile includes those procedures and maneuvers that can be evaluated in a motion visual simulator. The sequence may be changed and other non-normal procedures selected at the discretion of the check pilot.

The instructor will provide appropriate instructions, weather information and air traffic clearances and, insofar as possible, conduct the flight on a real time basis. VNAV or V/S will be used on non-ILS approaches per operator procedures. Simulator system faults will be removed after each full stop landing.

The crew will be expected to respond to instructions and situations as they would on a line flight and to use flight deck resources available (autopilot, auto throttle, etc.) unless specifically restricted by the instructor. Command qualities and crew coordination are a part of the evaluation.

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ROUTE OF FLIGHT

ORIGIN	Manchester (EGCC) RWY 23 R Gate ----------
ROUTE	*EGCC SANBIR SANBA PEDIG M605 DTYDCT WCO EGLL*
DEPARTURE	*POL5R*
DESTINATION	London Heathrow (EGLL)
ALTERNATE	Manchester (EGCC)
FLIGHT NUMBER	PIA777

PERFORMANCE

GRWT	220,000 KGS	FLAPS	opt
FUEL	20,000 KGS	CG	24%
ZFW	200,000 KGS	WIND	220/15
RESERVES	5,400 KGS	SLOPE	0
CRZ ALT	FL 290	EO ACCEL HT	1,000’
COST INDEX	180	ACCEL HT	3,000’
THRUST LIM	As required	THR REDUCTION	1,000’

WEATHER

EGCC Wind 220/15 Visibility 3 km Ceiling 1200 Overcast Temperature 09C Dew Point 07 C Altimeter 1010 Mb ILS RWY 23 R.

EGLL Wind 270/10 Visibility 4 km Ceiling 800 Overcast Temperature I0 C Dew Point 07 C Altimeter 1011 Mb VOR RWY 27 R.

CLEARANCE

Pakistan 777 is cleared to London Heathrow Airport (EGLL). SONEX ONE ROMEO (SONE 1R). Departure control 136.57, squawk 4737.

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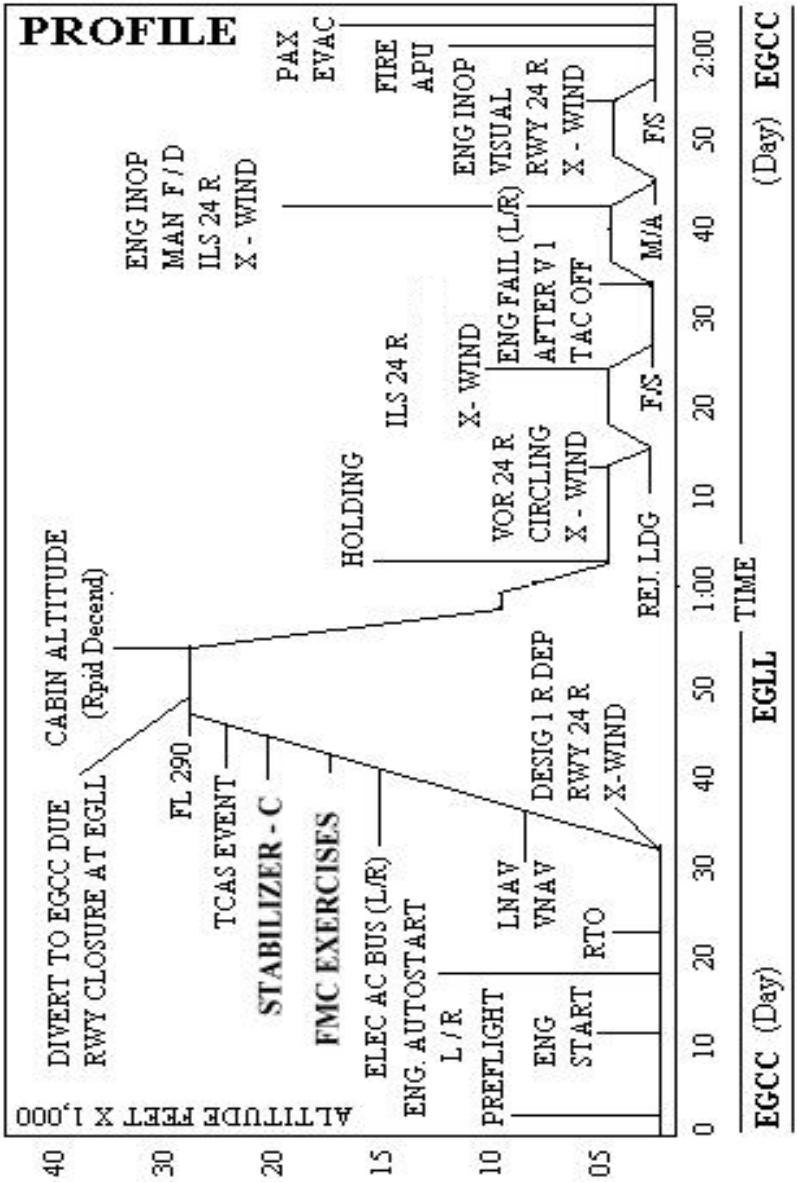
PROFILE
ALTITUDE FEET X 1,000
40
30
20
15
10
05
DIVERT TO EGCC DUE
RWY CLOSURE AT EGLL
CABIN ALTITUDE
(Rpid Decend)
FL 290
TCAS EVENT
STABILIZER - C
FMC EXERCISES
ELEC AC BUS (L/R)
ENG. AUTOSTART
L / R
PREFLIGHT
ENG
START
LNAV
VNAV
RTO
DESIG 1 R DEP
RWY 24 R
X-WIND
HOLDING
ILS 24 R
X- WIND
VOR 24 R
CIRCLING
X - WIND
REJ. LDG
F/S
ENG INOP
MAN F / D
ILS 24 R
X - WIND
ENG FAIL (L/R)
AFTER V 1
TAC OFF
M/A
ENG INOP
VISUAL
RWY 24 R
X - WIND
F/S
PAX
EVAC
FIRE
APU
0
10
20
30
40
50
1:00
10
20
30
40
50
2:00
EGCC (Day)
EGLL
TIME
(Day) EGCC

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24 LANDING TRAINING

24.1 OBJECTIVES

The purpose of the landing training is to fulfill Type Rating and Endorsement Requirements and to prepare the trainee for Line Training and to become proficient in the Landing Technique.
Varying wind conditions
Takeoff / landing in wind shear
Landing from “Steep” or “Shallow” Approaches
Recovery from Rejected Landing
Landing with one engine
X-wind Landing technique
Avoiding tail strikes

24.1.1 GENERAL

An *SFI/SFE* will conduct the landing training. One hour briefing will precede landing training session

The emphasis will be on crew coordination throughout with minimum of distractions for flight profiles enabling the trainee’s concentration to be focused on performing the necessary procedures.

24.1.2 DURATION

Each trainee will receive two hours of landing training in the simulator before commencing line training. RHS training for captains on following items:

(1) Takeoff Engine Failure at V1
(2) ILS approach single engine
(3) Single Engine go around
(4) Single Engine ILS APP & landing/evacuation

24.1.3 PREPARATION

The trainee will demonstrate ability to perform all normal procedures.

Trainees are expected to study and understand related sections in FCTM prior to landing training.

Instructor will provide take off and landing data card (if applicable).

24.1.4 **AREAS TO BE COVERED**

Normal preflight procedures
Use of automation
Manual handling
Lesson Plan

24.2 **UNSTABILIZED APPROACH RECOGNITION AND RECOVERY TRAINING**

24.2.1 **OBJECTIVES**

This training is to imbed the concept of different energy states and its impact on stable approach. Any attempt to correct unstable approach ceases at 1000 ft AAL. Go-around becomes mandatory then.

24.2.2 **DURATION**

One hour per trainee

24.2.3 **GUIDELINES TO INSTRUCTOR**

This briefing and training can be carried out together with the landing session or separately.

LANDING TRAINING *& UNSTABLE APPROACHES* (SIMULATOR)

Pre Session Briefing	Takeoff Data card / Bug Setting		
	Takeoff Technique		
	Effect of Head / Tail wind on APPR		
	Adverse Weather Landing Technique		
	Normal Landing Technique		
	X-Wind Landing Technique		
WEATHER	At Instructor's discretion		
Airport / Runway / Condition	EGCC 23R	DRY	
RANK & NAME P-	DATE:	PLANNED TRG TIME *03:00* HOURS	ACTUAL TRG TIME
COMMENTS			

TRAINING AND CHECK FLIGHT CREW	SIGNATURE	TRAINEE'S SIGNATURE

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LANDING TRAINING (SIMULATOR)

NAME _____ P- _____DATE ___ / ___ / ___

POSITION: ( ) CM1 ( ) CM2						
	Number of Attempts			Extra Attempts		
TOW – 250,000 KGS						
WIND:						
HEAD WIND 20 KTS						
HEAD WIND 30 KTS						
X-WIND (LEFT - 45°) 30 KTS						
X-WIND (RIGHT - 45°) 30 KTS						
X-WIND (90°) LEFT 30 KTS						
X-WIND (90°) RIGHT 30 KTS						
WIND SHEAR:						
TAKEOFF (HEAD WIND TO TAIL WIND)						
TAKEOFF (TAIL WIND TO HEAD WIND)						
DOWN BURST (TAKEOFF AND LANDING)						
VISUAL APPROACHES (USING VASI)						
STEEP APPROACH (ROD>1000 FPM, NO VASI)						
SHALLOW APP. (ROD<300 FPM, NO VASI)						
REJECT LANDING						
SINGLE ENG APPROACH (L ENG FAIL):						
X-WIND (90°) LEFT 30 KTS						
SINGLE ENG APPROACH (R ENG FAIL):						
X-WIND (90°) RIGHT 30 KTS						
EXTRA LANDINGS (CAPTAIN RHS)						
TOW (LIGHT) – 197,000 KGS HEAD WIND 30 KTS						
TOW (HEAVY) – 325,000 KGS HEAD WIND 30 KTS						

Note:

1. Each takeoff / landing will be marked with a "√" (tick).
2. A total number of about Twenty (20) landings will be practiced and marked in the boxes. Additional landings, if required, may be practiced if time permits.
3. The above landings practice is considered sufficient for a crew member to achieve a satisfactory standard.
4. Instructor to mention in comments if extra landings have been required.

DATE:_____

CAPT./FO :_____ P-NO:_____AIRCRAFT: _____

Type of License & No. _____ Duration of Training 01Hours/trainee

1. **Recognition** of development of UA through.
   a) Knowing and understanding the appropriate parameters and tolerances associated with an approach.
   b) The dynamics involved e.g.; ATC, Fatigue Factor, Hurry Syndrome, Weather. Any malfunctions or abnormality.
   c) Infringement of applicable tolerances necessitating a Go- Around.
2. **Controlling** a situation developing into a UA through manipulating aircraft controls or notifying ATC of company policy on stabilized approach.
3. **Action** necessitating a Go Around is the final step. A non-punitive time-honored maneuver which saves lives.
   a) A It is essential to acknowledge the fact that all maneuvers required to control an unstable approach has a lower limit of 1000 feet AAL.
   b) Practice Balked Landing

APPRO-ACHES	WIND EFFECT	ATC RESTRICTIONS	MALFUNCTION	TOPOGRAPHIC EFFECTS
ILS RNP Visual	1) Windshear 2) Increasing Tail wind 3) Micro Burst	1) 160 till 4nm 2) Late descent clearance	1) Flap asymmetry 2) CG limit	Mountain wave

Filling Instructions: Approach types and rest of the other scenarios must be filled in above table.

Comments of SFI/SFE _____

_____

_____

_____

NAME & SIGNATURE OF SFI/SFE

SIGNATURE OF TRAINEE

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GENERAL

This gives crew members the opportunity to practice line operations (e.g. maneours, operating skills, systems operation and the Company procedures) with a full crew compliment in realistic environment. Crew members learn to handle a variety of scripted real time scenarios which include routine, abnormal, and emergency situations. They also learn and practice Cockpoit Resource Management skills, including crew coordination, judgement, decision making, and communication skills.

LESSON SUMMARY

The overall objective of ETOPS/LOFT is to improve total flight crew performance, thereby preventing incidence and accidents during operational flying.

This lesson consists of four-hour ETOPS/LOFT.

The session should contain the following phases:

i) Briefing,
ii) pre-flight planning documents and activities.
iii) Flight time
iv) De-briefing

LESSON OBJECTIVES

Complete introduction to ETOPS/LOFT
Practice diversion during ETOPS portion of flight
Consider fuel jettison, drift down and other non-normal checklist requirements.
Consider RVSM requirements.
Consider communication requirements.
CPDLC Training

DEFINITIONS

ETOPS: Extended Range Twin Engine Operation
Twin engine aircraft over a route that contains a point further than sixty minutes still air flying time from an adequate airport at one engine out cruise speed under ISA condition.
MNPS: Minimum Navigation Performance Specification (FL-285-420)
SOTA: Shanon Oceanic Transition Area
OCA: Oceanic Control Area

TMI: Track Message Identification (01 to 365)
PM: Publish Minima
NAT: North Atlantic
GNE: Gross Navigation Error
RVSM: Reduce Vertical Separation Minimum (FL290-410)
RNP: Required Navigation Performance (Operation)
EEP: ETOPS Entry Point (Never Move)

ETP-CP: Equitime point /critical point (Move with headwind or tailwind etc.)
(Reference Weight (B-777) 324 tons – 120 MTS 850 nm SPD 0.84 M/320 kts)
316 tons for 180 MTS 1272 nm SPD 0.84 M/320 kts

ROUTE OF FLIGHT

ORIGIN	Manchester (EGCC) Gate ---------- RWY 23L
ROUTE	LIVS 1Y LIVSU UY53 WAL UL10 PENIL UL70 BAGSO XETBO LIMRI NAT B TUDEP EBONY J573 ENE PARCH1 KJFK
DESTINATION	JFK
FLIGHT NUMBER	PIA777

PERFORMANCE

GRWT	260,000 KGS	FLAPS	opt
FUEL	61,000 KGS	CG	25%
ZFW	200,000 KGS	WIND	Calm
RESERVES	8,000 KGS	SLOPE	0
CRZ ALT	FL 340,360	EO ACCEL HT	1,000′
COST INDEX	180	ACCEL HT	3,000’
THRUST LIM	As required	THR REDUCTION	1,000’

CLEARANCE

Pakistan777 is cleared to the JFK, via the LIVSU 1Y Departure. Maintain Flight Level 60. Departure control frequency 134.12, squawk 4234.

>>> EGCC (MANCHESTER RWY 05RL/23LR) <<< ETD 1220 UTC

TAF 100459Z **1006/1112 30004KT 9999 BKN008** TEMPO 1006/1009 BKN010 **BECMG 1009/1012 BKN014** PROB30 TEMPO 1015/1018 SCT015 BECMG 1018/1021 BKN008 PROB30 1100/1109 4000 BR BKN004 BECMG 1109/1112 SCT015

>>> KJFK (JOHN F KENNEDY INTL) <<< ETA 1930 UTC

TAF 100536Z 1006/1112 03015KT P6SM OVC015 **FM101700 02015G23KT P6SM SCT015 OVC025** FM102300 02013KT P6SM SCT025 SCT150 FM110800 02012KT P6SM SCT150

>>> KBOS (GENERAL EDWARD LAWRENCE LOGAN) <<< ALTERNATE

TAF 100540Z 1006/1112 35014G22KT 1 1/2SM -SN BR OVC020 FM101000 36014KT P6SM OVC025 **FM101300 36013G22KT P6SM OVC025** FM102100 36011KT P6SM SCT025 FM110000 01007KT P6SM FEW250 FM110500 01011KT P6SM SCT250 FM110900 01011G19KT P6SM SCT020

>>> EINN (SHANNON) <<< SNN SUITABLE 1154Z/1835Z

TAF 100500Z 1006/1106 VRB03KT 8000 OVC007 PROB40 TEMPO 1006/1010 4000 BR BKN004 **BECMG 1010/1012 15007KT 9999 FEW008 BKN012 BECMG 1012/1014 FEW012 SCT020** TEMPO 1100/1106 5000 BR BKN005

>>> CYYT (ST. JOHN'S INTL) <<< YYT SUITABLE 1635Z/1751Z

TAF 100538Z **1006/1106 35010KT P6SM SCT008 BKN040 TEMPO 1006/1018 2SM -SHSN BKN008** OVC040 BECMG 1015/1017 13012KT **FM101800 13012KT P6SM BKN025** FM110000 15007KT 5SM -SN OVC020 FM110200 15007KT 1SM -SN OVC008 FM110400 15005KT 3/4SM -SN VV008

>>> EGBB (BIRMINGHAM) <<<

TAF 100458Z 1006/1106 26005KT 6000 BKN008 PROB30 1006/1008 4000 HZ BECMG 1008/1011 9999 FEW015 PROB40 TEMPO 1011/1106 9000 BKN012

>>> EGLL (LONDON HEATHROW RWY 09RL/27LR) <<<

TAF 100459Z 1006/1112 VRB03KT 6000 SCT018 TEMPO 1006/1010 4000 BR PROB30 TEMPO 1006/1009 0800 FG BKN000 BECMG 1009/1012 9999 PROB30 TEMPO 1009/1011 BKN008 PROB30 1102/1106 8000 BKN014

>>> BIEG (EGILSSTADIR) <<<

TAF 100455Z 1006/1106 22025G40KT 9999 SCT030 BKN050 TX01/1006Z TNM07/1106Z BECMG 1015/1018 22020KT

>>> BIKF (KEFLAVIK) <<<

TAF 100455Z 1006/1106 24035G50KT 8000 SHSN FEW015CB BKN030 TX00/1006Z TNM04/1106Z TEMPO 1006/1106 1000 SHSN BKN008CB BECMG 1015/1018 22025G35KT

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>>> BGSF (KANGERLUSSUAQ) <<<

TAF 100453Z 1006/1101 08008KT 9999 BKN090 TEMPO 1006/1101 BKN040

>>> LPLA (LAJES) <<<

TAF 100510Z 1006/1106 VRB03KT 9999 FEW025 PROB40 TEMPO 1110/1118 SCT020 BKN035

>>> CYQX (GANDER INTL) <<<

TAF 100538Z 1006/1106 31004KT P6SM FEW010 FM101000 33005KT P6SM SCT010 TEMPO 1010/1015 3SM -SHSN BKN010 BECMG 1012/1014 15008KT FM101500 15008KT P6SM BKN010 BECMG 1019/1021 10008KT FM110000 04008KT 5SM -SHSN BKN008 FM110500 29006KT 3SM -SN BKN020

>>> CYYR (GOOSE BAY) <<<

TAF 100530Z 1006/1106 24005KT P6SM FEW150 BKN200 FM101600 22010G20KT P6SM SCT030 BKN100 TEMPO 1018/1022 3SM -SN BKN030 OVC080 FM102200 29012G22KT P6SM -SHSN BKN030 TEMPO 1022/1105 5SM -SHSN BLSN FM110500 29010KT P6SM FEW050

>>> CYJT (STEPHENVILLE) <<<

TAF 100538Z 1006/1106 03006KT P6SM SKC BECMG 1010/1012 08010KT FM101500 08010KT P6SM BKN025 FM102200 07008KT 5SM -SHSN BKN020 OVC100 FM110300 VRB03KT 2SM -SHSN BKN008

>>> CYHZ (STANFIELD INTL) <<<

TAF 100538Z 1006/1106 03012KT P6SM FEW020 OVC120 TEMPO 1006/1010 4SM -SN OVC020 FM101000 02008KT 2SM -SN OVC010 TEMPO 1010/1022 6SM -SN SCT010 OVC040 BECMG 1016/1018 01008KT FM102200 36008KT P6SM BKN015 BECMG 1100/1102 35012G22KT

>>> KBGR (BANGOR INTL) <<<

TAF 100732Z 1008/1106 03007KT P6SM VCSH OVC035 FM101600 36005KT P6SM BKN035 FM101800 36005KT P6SM SCT040 FM102100 01004KT P6SM SCT250

>>> CYQB (JEAN LESAGE INTL) <<<

TAF 100538Z 1006/1106 06012KT P6SM OVC040 TEMPO 1006/1016 4SM -SN OVC020 PROB30 1006/1016 2SM -SN OVC015 FM101600 24012KT P6SM FEW030 BECMG 1020/1022 32008KT FM110000 33010KT P6SM SKC BECMG 1104/1106 05005KT

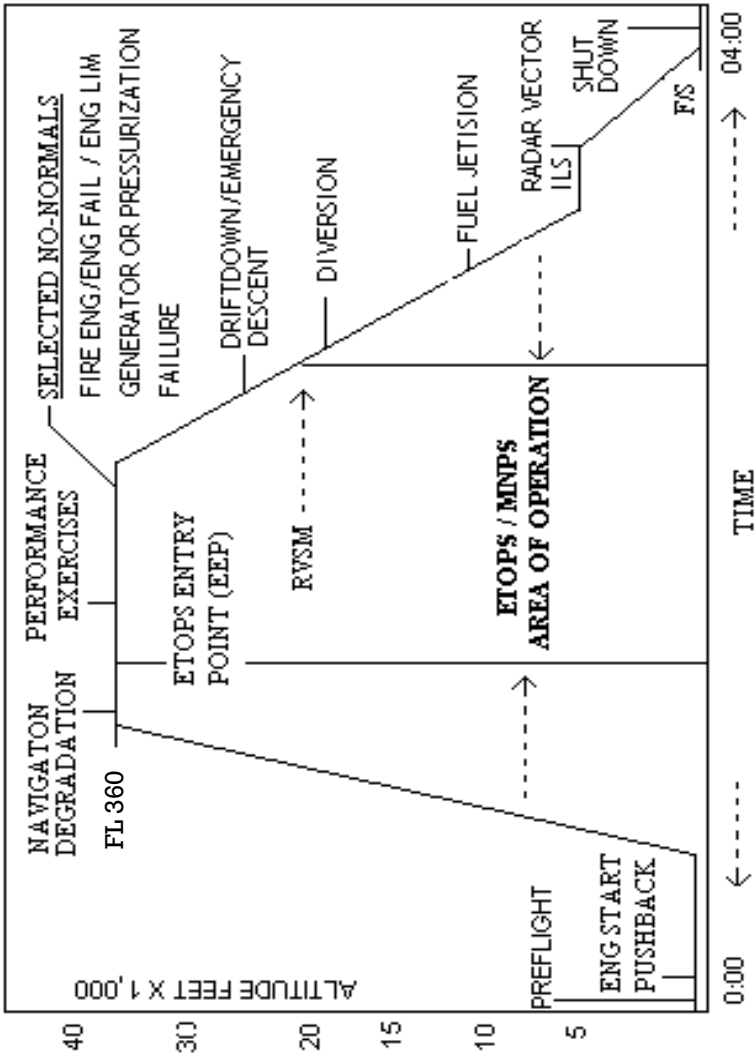
>>> CYUL (PIERRE-ELLIOTT-TRUDEAU INTL) <<<

TAF 100538Z 1006/1106 01013KT P6SM OVC025 TEMPO 1006/1016 4SM -SN OVC015 FM101600 21008KT P6SM FEW030 BECMG 1022/1024 31010KT FM110000 21005KT P6SM SKC BECMG 1101/1103 02010KT

>>> KIAD (WASHINGTON DULLES INTL) <<<

TAF 100714Z 1007/1112 01008KT P6SM -FZDZ OVC013 FM100800 01009KT 5SM BR OVC013 FM101400 36011KT P6SM OVC015 FM110100 01009KT P6SM SCT015 FM110900 36006KT P6SM FEW250

PIA B777 ETOPS Training Profile



PREFLIGHT

Normal procedures & ETOPS preparation

ENGINE START

Start & pushback clearance (tail right)
Normal Procedures

TAXI-OUT AND TAKE OFF

Normal procedures
Heavy Weight take off

CLIMB

Normal procedures

CRUISE

Complete normal cruise level off
Navigation Performance Degradation Exercises
Prior to entering MNPS area
RVSM requirement degradation exercise
Before ETOPS Entry Point (EEP)
  Complete ETOPS company Operating procedures
  Obtain weather updates for Enroute Alternates
  Check FMS BRG/DIST to next alternate.
  Send verification of ETOPS critical system checks
  (Supports ETOPS supplemental maintenance programmed)
Confirm communication capability (HF, SATCOM)
CPDLC (Controller Pilot Data Link communication) Log in.

Enter ETOPS segment of flight plan
  Five minutes after EEP
  FIRE ENG L or R, or
  ENG FAIL L or R, or
ENG LIM (EGT overheat with thrust lever closed), or volcanic ash encounter.
PRESSURIZATION FAILURE
Complete non-normal checklist with non in-flight restart possible.

FMC
  Drift down

RVSM consideration, turn away from track
As indicated on navigation chart RVSM rules
Determine new altitude capability
Determine Drift down airspeed and use VNAV for drift down

Diversion
ETOPS consideration
Chose ETOPS alternate
Obtain new clearance
Divert to alternate
Use FMC ALTN page

CRM Considerations
Workload management
Sequence tasks
Avoid work overload
Do not be hurried.

DESCENT

FUEL JETTISON

APPROACH and LANDING

Radar Vectors, ILS approach RWY 11 (KEF),
Full stop landing

TAXI-IN

Normal procedures

SHUTDOWN

Normal Procedures

SECURE

Normal procedures

(NAT-1/2 TRACKS FLS 310/390 INCLUSIVE

FEB 10/1130Z TO FEB 10/1900Z

B LIMRI 52/20 53/30 53/40 52/50 TUDEP
EAST LVLS NIL
WEST LVLS 310 320 330 340 350 360 370 380 390
EUR RTS WEST NIL
NAR NIL-
PART ONE OF TWO PARTS-
A MALOT 53/20 54/30 54/40 53/50 RIKAL
EAST LVLS NIL
WEST LVLS 310 320 330 340 350 360 370 380 390
EUR RTS WEST NIL
NAR NIL-
C DINIM 51/20 52/30 52/40 51/50 ALLRY
EAST LVLS NIL
WEST LVLS 310 320 330 340 350 360 370 380 390
EUR RTS WEST NIL
NAR NIL-
END OF PART ONE OF TWO PARTS)
(NAT-2/2 TRACKS FLS 310/390 INCLUSIVE
FEB 10/1130Z TO FEB 10/1900Z
PART TWO OF TWO PARTS-
D SOMAX 50/20 51/30 51/40 50/50 ELSIR
EAST LVLS NIL
WEST LVLS 310 320 330 340 350 360 370 380 390
EUR RTS WEST NIL
NAR NIL-
REMARKS.

1. **TMI IS 041 AND OPERATORS** ARE REMINDED TO INCLUDE THE TMI NUMBER AS PART OF THE OCEANIC CLEARANCE READ BACK.
2. ADS-C AND CPDLC MANDATED OTS ARE AS FOLLOWS
   TRACK A 350 360 370 380 390
   TRACK B 350 360 370 380 390
   TRACK C 350 360 370 380 390
   TRACK D 350 360 370 380 390
   END OF ADS-C AND CPDLC MANDATED OTS
3. FOR STRATEGIC LATERAL OFFSET AND CONTINGENCY PROCEDURES RELATED TO OPS IN NAT FLOW PLEASE REFER TO THE NAT PROGRAMME COORDINATION WEB SITE AT WWW.NAT PCO.ORG. SLOP SHOULD BE USED AS A STANDARD PROCEDURE AND NOT JUST AS WEATHER TURBULENCE AVOIDANCE.
4. EIGHTY PERCENT OF GROSS NAVIGATION ERRORS RESULT FROM POOR COCKPIT
   PROCEDURES. ALWAYS CARRY OUT PROPER WAY POINT CHECKS.
5. OPERATORS ARE REMINDED THAT THE CLEARANCE MAY DIFFER FROM YOUR FLIGHT PLAN, FLY YOUR CLEARANCE.
6. UK AIP. ENR 2.2.4.2 PARA 5.2 STATES THAT NAT OPERATORS SHALL FILE PRM INFORMATION.

FLIGHT PLAN PACKAGE
PIA 721 MAN-JFK 10XXX15 FLT PLAN ID 2A008413
FTPRLS 2A008413

DISPATCH RELEASE MESSAGE

BAY NO:..... CORD:.....
PK:721 CAPTAIN: xxxxxxxxxx SECTOR:MAN-JFK REG:APBGY
SDEP: …….. SARR: …….. BLK-TIME: 07:10 FLT-TIME: 07.01
TTL.FUEL: 57700 TRIP: 45363 FOD: 11537 HOLD: 2611 ALT: 5158
EST.TOGW: 247804 EST.LGWT: 202441 RESERVE FUEL: 7769
EST.ZFW: 191000 RVD.ZFW: .....

MINIMUM EQUIPMENT LIST ITEMS APPLICABLE FOR THIS AIRCRAFT

FOR C/F SNAGS MENTIONED IN TECH LOG, PLZ REF. MEL/CDL/DDG

F.O.O. NOTES TO CREW

CUT CHANNEL AT MAN FREQ 122.050 MHZ
CUT CHANNEL FREQ AT JFK 131.300 MHZ CALLSIGN: TFC OFFICE
SWISSPORT RADIO 131.95 MHZ
JFK IAT RAMP 130.775MHZ FOR TAXI INSTRUCTIONS INSIDE TERMINAL 4
PUSH BACK AUTHORIZATION

ROUTE AND PROFILE

EGCC LIVS1Y LIVSU Y53 WAL UL10 PENIL UL70 BAGSO XETBO LIMRI 5220N 5330N 5340N 5250N TUDEP EBONY J573 ENE PARCH1 KJFK
360 TUDEP 380
ALTERNATE 1 ROUTE AND PROFILE

KJFK MERIT3 MERIT ORW ORW6 KBOS
250

AIRCRAFT ACCEPTED
CAPTAIN XYZ . . . . . .
PREPARED BY FLIGHT OPERATIONS OFFICER
WASEEM ABBAS LIC 895
COMPUTER GENERATED FPL, FOO SIGNATURE NOT REQUIRED.

ORIGIN METAR
EGCC 100750Z VRB02KT 9999 BKN008 04/02 Q1033 TEMPO BKN010
DEST TAF
KJFK 100536Z 1006/1112 03015KT P6SM OVC015 FM101700 02015G23KT P6SM SCT015 OVC025 FM102300 02013KT P6SM SCT025 SCT150 FM110800 02012KT P6SM SCT150
ALTN TAF
KBOS 100540Z 1006/1112 35014G22KT 1 1/2SM -SN BR OVC020 FM101000 36014K P6SM OVC025 FM101300 36013G22KT P6SM OVC025 FM102100 36011KT P6SM SCT025 FM110000 01007KT P6SM FEW250 FM110500 01011KT P6SM SCT250

SABRE DISPATCH MANAGER FLIGHT PLAN

FLT# /DATE	ORG /DST	ACFT/REG	PLAN ID	GRIB	AVGWC/TD
721 /10FEB15	EGCC/KJFK	B77L/APBGY	2A008413	1000	M036/M01

ETD:1220/1921:ETA

FMS ROUTE - MANJFK/001 RT DIST 2995 GC DIST 2903

EGCC LIVS1Y LIVSU Y53 WAL UL10 PENIL UL70 BAGSO XETBO LIMRI 5220N 5330N 5340N 5250N TUDEP EBONY J573 ENE PARCH1 KJFK

FL PROFILE

360 TUDEP 380

EQPTTYPE B777-240LR / ENGTYPE GE90110B1L

PERFORMANCE SCHEDULE	-CLB/310.M84	-CRZ/83APR14	-DSC/M84.310
APD FACTOR	- CLB/	- CRZ/	- DSC/

HIGHEST TERRAIN A-B 8600FT

HIGHEST TERRAIN B-C 5500FT

PLANNED	FUEL	TIME		WEIGHTS	ACTUAL	STRUCTURAL OR PERF LIMIT
TRIP	45363	07.01	|			
CONTINGENCY	2268	00.24	|			
XHLD DEST	0	00.00	|	ZFW 191000		MZFW 209106
ALTN/BOS/KBOS	5158	00.33	|	RPF 57700		FCAP 154229
XHLD ALTN	0	00.00	|	RPW 248700		MRPW 341101
STD HOLDING	2611	00.30	|	TOW 247804		MTOW 340194
ETP/BU	0	00.00	|	TIF 45363		
RECLR/BU	0	00.00	|	LDW 202441		MLDW 223167
MIN REQUIRED	55400	08.28	|	FOD 11537		
EXTRA	1500	00.15	|	RES 7769		
TKOF FUEL	56900	08.43	|			
TAXI FUEL	800		|	FUEL ORDERED		
RAMP FUEL	57700	08.43	|	REASON		

BALLAST FUEL 0 INCL IN RAMP FUEL

BURNOFF ADJUSTMENT PER 1000 KGS CHANGE IN TAKEOFF WT - 000141 KGS

RESTRICTED MAX TAKE OFF WEIGHT INFORMATION

A.	B.	C.
R.T.O.G.W 340194	MLDW 223167	MZFW 209106
	TRIP FUEL 45363	T.O.FUEL 56900
	LNDG LMT TOGW 268530	ZFW LMT TOGW 266006

ALTERNATE AIRPORTS SUMMARY

ALT1	FMSDIVRTE	FL	WC	ETI	ZFW	TRIP	RQDFOB	NM
BOS/KBOS	JFKBOS/ALT	250	P014	00.33	191000	5158	56200	181

KJFK MERIT3 MERIT ORW ORW6 KBOS

OPTIONAL	FMSDIVRTE	FL	WC	ETI	ZFW	TRIP	RQDFOB	NM
EWR/KEWR	JFKEWR/	020	P004	00.06	191000	2200	52643	18
PHL/KPHL	JFKPHL/	120	P010	00.19	191000	3602	54282	81
BDL/KBDL	JFKBDL/	150	M009	00.22	191000	3872	54598	92

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ETOPS / ETP AIRPORT SUMMARY

EEP SNN N52 05.7 W020 40.1
EXP YYT N52 38.3 W044 43.4
PKETP2D2
CRITICAL FUEL CALCULATION SNN/YYT TIME/ 2.40 BASED ON 314 KT
ETP COORDS N53 05.7 / DIST 1169 NM / TIME 02.35 / BURN 19310
W033 29.6 ETP / SNN ETP / YYT

CRUISE DIST	0889	0807
AVERAGE WIND COMP/FL100	P015	M010
AVERAGE TEMP/FL100	M001	M014

WEIGHT OVER ETP 228494 KGS
FUEL REMAINING OVER ETP... 037494 KGS

...FUEL CALCULATION...	FUEL	TIME	2ENG	1ENG	2ENG	1ENG
CRUISE/FL100/DSC	13700	02.06	13400	13400	13700	13800
RES/APD 5 PCT EACH	900		900	900	900	900
HOLDING/1500FT/ISA	2800	00.30	2600	2300	2800	2500
2 APPCH/GA	1200		1200	1200	1200	1200
APU FUEL BURN	400		400	400	400	400
ANTI ICE 5 PCNT	600		500	500	500	500
TOTAL	19600		19000	18800	19600	19400

EARLIEST/LATEST ARRIVAL TIME FOR ETOPS ALTERNATIVE AIRPORTS
BASED ON ETD. BASED ON ATD.
SNN SUITABLE 1154Z/1835Z
YYT SUITABLE 1635Z/1751Z
CONTINGENCY PLAN SUMMARIES

CASE PROFILE TRIP FUEL TIME
RAMP WT 257100 ZFW 198000 TIME 0701 FRQD 057600 TRIP 046592
FL360 TUDEP 380
RAMP WT 240300 ZFW 184000 TIME 0701 FRQD 054800 TRIP 044243
FL360 TUDEP 380
1XFL LOWER TIME 0701 FRQD 057800 TRIP 046253
FL340 TUDEP 360
2XFL LOWER TIME 0701 FRQD 059500 TRIP 047895
FL320 TUDEP 340
1XFL HIGHER OR LIM ALT TIME 0700 FRQD 057000 TRIP 045478
FL360 XETBO 380 TUDEP 400

FLIGHT PLAN REMARKS FROM DISPATCH

ATIS - EGCC INFO . . . . .
RWY . . .. WIND. . . . / . . . . . VIS . . . . . TEMP . . . . . QNH . . . . . .
ATC CLRNCE . . . .
. . . .

---------- NAVIGATION LOG ----------

POINT	FIR	AWY	FL	OAT	TR/T	TAS	DIST	ETI	ETO	SEGBO
POINT	NAME	MORA	WC	MACH			TTLD	TTLT	RTO	ACCBO
FREQ	LAT	LONG	SHR		TR/M	GS			ATO	FOB

EGCC ELEV 00257FT ETD/1220 OFF BLOCKS . . . . DLACODE . . . .
MANCHESTER INTL AIRBORNE . . . . RAMPFUEL 57700
N53 21.2 W002 16.5 TKOFFUEL 56900

D255H	LIVS1Y	CLB		253T	191	8	00.02	....	729
D255H		4700	M001	7	00.02			....	729
N53 19.0 W002 28.5		WS 1		255M	190			....	56171
				AWIND.....		AGS.....		ABURN.....	

D255M	LIVS1Y	CLB		254T	323	5	00.01	....	277
D255M		4700	P003			12	00.03	....	1006
N53 17.6 W002 36.4		WS 1		255M	326			....	55894
				AWIND.....		AGS.....		.ABURN.....	

D255P	LIVS1Y	CLB		251T	386	3	00.01	....	146
D255P		4800	P006			15	00.04	....	1152
N53 16.6 W002 41.2		WS 1		253M	392			....	55748
				AWIND.....		AGS.....		ABURN.....	

LIVSU	LIVS1Y	CLB		254T	336	5	00.01	....	279
	4800	P008				21	00.05	....	1431
N53 15.2 W002 49.5		WS 1		256M	344			....	55469
				AWIND.....		AGS.....		ABURN.....	

WAL Y53		CLB		307T	386	14	00.02	....	642
WALLASEY	4800	P014				35	00.07	....	2073
114.1 N53 23.5 W003 08.1		WS 1		309M	400			....	54827
				AWIND.....		AGS.....		ABURN.....	

PENIL	UL10	CLB		305T	435	23	00.03	....	945
	4800	P018				58	00.10	....	3017
N53 37.0 W003 39.8		WS 1		307M	453			....	53883
				AWIND.....		AGS.....		ABURN.....	

BABRA	UL70	CLB		275T	473	10	00.01	....	380
	4800	P017				68	00.11	....	3397
N53 37.7 W003 56.7		WS 1		277M	490			....	53503
				AWIND.....		AGS.....		ABURN.....	

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POINT  FIR     AWY   FL    OAT      TR/T   TAS    DIST     ETI ETO     SEGBO
POINT  NAME    MORA  WC    MACH                   TTLD    TTLT RTO     ACCBO
FREQ   LAT     LONG  SHR             TR/M   GS                  ATO       FOB
GIGTO          UL70  CLB             273T   481    5       00.01 ....      199
               4800  P019                          73      00.12 ....     3596
     N53 38.0 W004 05.9 WS 1         278M   501                  ....    53304
                                     AWIND........  AGS........  ABURN.........
-----------------------------------------------------------------------------------
SOPAX          UL70  CLB             274T   477    13      00.01 ....      470
               4800  P022                          86      00.13 ....     4066
     N53 38.8 W004 27.1 WS 1         277M   499                  ....    52834
                                     AWIND........  AGS........  ABURN.........
-----------------------------------------------------------------------------------
TOPC           UL70  FL360  M064     273T   499    6       00.01 ....      229
               4800  P019                   92      00.14            ....     4296
     N53 39.2 W004 37.9 WS 1         278M   518                  ....    52604
     WIND/VEC                        AWIND........  AGS........  ABURN.........
-----------------------------------------------------------------------------------
RAMOX          UL70  FL360  M064     273T   468    7       00.01 ....       99
               4800  P018   M83              100     00.15 ....     4394
     N53 39.6 W004 50.4 WS 1         278M   486 ....                     52506
     WIND/VEC 114019                 AWIND........  AGS........  ABURN.........
-----------------------------------------------------------------------------------
BAGSO EISN     UL70  FL360  M064     273T   468    24      00.03 ....      318
               4800  P017   M83                   123     00.18 ....     4712
     N53 40.8 W005 30.0 WS 1         278M   485                  ....    52188
               WIND/VEC 122019       AWIND........  AGS.......  .ABURN.........
-----------------------------------------------------------------------------------
XETBO          DCT   FL360  M062     252T   469    325     00.41 ....     4444
               4800  P006   M83                   448     00.59 ....     9156
     N52 00.0 W014 00.0 WS           260M   474 ....                     47744
               WIND/VEC 166018       AWIND........  AGS........  ABURN.........
-----------------------------------------------------------------------------------
LIMRI EGGX     DCT   FL360  M062     270T   470    37      00.05 ....      506
               1100  P003   M83                   486     01.04 ....     9662
     N52 00.0 W015 00.0 WS 1         277M   472                  ....    47238
               WIND/VEC 175019       AWIND........  AGS........  ABURN.........
-----------------------------------------------------------------------------------
5220N MNPS     DCT   FL360  M063     270T   470    185     00.24 ....     2562
               1100  M006   M83                   671     01.28 ....    12223
     N52 00.0 W020 00.0 WS 2         279M   463 ....                     44677
               WIND/VEC 199039       AWIND........  AGS........  ABURN.........
-----------------------------------------------------------------------------------
EEP            DCT   FL360  M063     279T   470    25      00.03 ....      358
EEP/EINN       1100  M022   M83                   696     01.31 ....    12581
     N52 05.7 W020 40.1 WS 1         294M   448                  ....
     44319
               WIND/VEC 201046       AWIND........  AGS........  ABURN.........
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POINT  FIR     AWY   FL    OAT     TR/T   TAS    DIST     ETI ETO        SEGBO
POINT  NAME    MORA  WC    MACH                  TTLD    TTLT RTO        ACCBO
FREQ   LAT     LONG  SHR            TR/M   GS                  ATO          FOB

5330N CZQX     DCT    FL360  M061  279T   470    346      00.46 ....       4879
               1100   M022   M83                1042     02.17 ....      17460
     N53 00.0 W030 00.0 WS 1          294M   448                  ....      39440
               WIND/VEC 213072       AWIND........  AGS........   ABURN.........
-----------------------------------------------------------------------------------
ETP1                  DCT    FL360  M056  270T   475      127    00.18 ....  1849
ETP/EINN/CYYT 1100    M043   M83                1169     02.35  ....      19310
     N53 05.7 W033 29.6 WS 3          288M   433                  ....      37590
               WIND/VEC 228058       AWIND........  AGS........   ABURN.........
-----------------------------------------------------------------------------------
5340N          DCT    FL360  M056  270T   475    236      00.32  ....       3440
               1100   M043   M83                1404     03.07  ....      22750
     N53 00.0 W040 00.0 WS 4          288M   433                  ....      34150
               WIND/VEC 241047       AWIND……..  AGS........   ABURN.........
-----------------------------------------------------------------------------------
EXP            DCT    FL360  M057 261T   476    173      00.25  ....       2524
EXP/CYYT       1100   M049   M83                1578     03.32  ....      25274
     N52 38.3 W044 43.4 WS 2          283M   427                  ....      31626
               WIND/VEC 258047       AWIND........  AGS........   ABURN.........
-----------------------------------------------------------------------------------
5250N          DCT    FL360  M058  261T   476    198      00.28  ....       2883
               1100   M049   M83                1776     04.00  ....      28157
     N52 00.0 W050 00.0 WS 1  283M          427            ....              28743
               WIND/VEC 260059       AWIND........  AGS........   ABURN.........
-----------------------------------------------------------------------------------
TUDEP  MNPS    DCT    FL360  M058  248T   474    131      00.19  ....       2030
               1100   M060   M83                1906     04.19  ....      30187
     N51 10.0 W053 14.0 WS 1          269M   414                  ....      26713
               WIND/VEC 256064       AWIND........  AGS........   ABURN.........
-----------------------------------------------------------------------------------
EBONY CZQM     DCT    FL380  M053  236T   479    673      00.97  ....       9698
               7700   M063   M83                2580     05.56  ....      39884
     N44 54.1 W067 09.4 WS            261M   416                  ....      17016
               WIND/VEC 261065       AWIND........  AGS........   ABURN.........
-----------------------------------------------------------------------------------
SEAER          J573   FL380  M053  240T   480    116      00.16  ....       1623
               7700   M059   M83                2696     06.12  ....      41508
     N43 55.5 W069 29.5 WS 2          257M   421                  ....      15392
               WIND/VEC 264061       AWIND........  AGS........   ABURN.........
-----------------------------------------------------------------------------------
SCARS          J573   FL380  M053  239T   480    43       00.06  ....        596
               8600   M055   M83                2739     06.18  ....      42104
     N43 32.9 W070 20.5 WS 2          256M   425                  ....      14796
               WIND/VEC 264058       AWIND........  AGS........   ABURN.........
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POINT  FIR     AWY  FL    OAT     TR/T  TAS    DIST     ETI ETO       SEGBO
POINT  NAME    MORA WC    MACH                TTLD     TTLT RTO      ACCBO
FREQ   LAT     LONG SHR                  TR/M GS                ATO       FOB
-----------------------------------------------------------------------------
ENE            J573 FL380 M053  238T  480    14       00.02  ....        192
KENNEBUNK      8600 M052  M83                2753     06.20  ....      42296
117.1 N43 25.5 W070 36.8 WS 2   255M         427              ....      14604
               WIND/VEC 265057  AWIND........ AGS........     ABURN.........
-----------------------------------------------------------------------------
ASPEN      PARCH1 FL380 M053  200T  480    39       00.05  ....        500
               8600 M027  M83                2792     06.25  ....      42796
     N42 49.0 W070 54.7 WS 2   216M  453                      ....      14104
               WIND/VEC 264057  AWIND........ AGS........     ABURN.........

-----------------------------------------------------------------------------
PVD        PARCH1 FL380 M053  200T  480    69       00.10  ....        895
PROVIDENCE     5600 M028 M83                2862     06.35  ....      43691
115.6 N41 43.5 W071 25.8 WS 3   215M  452                      ....      13209
               WIND/VEC 261056  AWIND........ AGS........     ABURN.........
-----------------------------------------------------------------------------
TOPD       PARCH1 FL380 M052  220T  481    19       00.02  ....        250
               4900 M043  M83                2880     06.37  ....      43941
     N41 29.1 W071 41.9 WS 5   233M  438                      ....      12959
               WIND/VEC         AWIND........ AGS........     ABURN.........
-----------------------------------------------------------------------------
TRAIT      PARCH1 DSC          220T  317    16       00.04  ....        114
               4900 M051                    2896     06.41  ....      44055
     N41 17.1 W071 55.1 WS 5   233M  266                      ....      12845
                                 AWIND........ AGS.....       ABURN.........
-----------------------------------------------------------------------------
PARCH      PARCH1 DSC          219T  317    14       00.03  ....        116
               4900 M077                    2910     06.44  ....      44171
     N41 06.0 W072 07.2 WS 6   233M  241                      ....      12729
                                 AWIND........ AGS........     ABURN.........
-----------------------------------------------------------------------
CCC        PARCH1 DSC          252T  317    33       00.07  ....        227
CALVERTON          3300 M040                2943     06.51  ....      44397
117.2 N40 55.8 W072 47.9 WS 6   266M  278                      ....      12503
                                 AWIND........ AGS........     ABURN.........
-----------------------------------------------------------------------------
ROBER      PARCH1 DSC          216T  317    18       00.04  ....        111
                   5500 P000                2961     06.55  ....      44508
     N40 41.1 W073 02.0 WS 5   229M  317                      ....      12392
                                 AWIND........ AGS........     ABURN.........
-----------------------------------------------------------------------------
KJFK KZNY PARCH1   DSC  M051   265T         34       00.06  ....        855
JOHN F.KENNEDY INTL 5500 P006                2995     07.01  ....      45363
     N40 38.4 W073 46.7 WS 5   279M                           ....      11537
                                 AWIND........ AGS........     ABURN.........
-----------------------------------------------------------------------------
```

```
ELEVATION 00013FT
ETA/1921        RETA/. . . .        ATA/. . . .        ON BLOCKS/. . . .
-----------------------------------------------------------------------------------------------------
ATIS - KJFK INFO . . . . .
RWY . . .       WIND    . . / . .   VIS . . .   TEMP . . .   QNH . . . .  TL . . . .
-----------------------------------------------------------------------------------------------------
FIRST ALTERNATE
---------------
                          ///// NAVIGATION LOG - KBOS /////
POINT   FIR     AWY   FL    OAT     TR/T   TAS    DIST     ETI ETO        SEGBO
POINT   NAME    MORA  WC    MACH                  TTLD     TTLT  RTO      ACCBO
FREQ    LAT     LONG  SHR           TR/M   GS              ATO             FOB
-----------------------------------------------------------------------------------------------------
KJFK DIVERSION          TIME . . .                DIV REASON . . . . . . . . . . . .
N40 38.4 W073 46.7      DIV FUEL ON BOARD . . . . . . . .
-----------------------------------------------------------------------------------------------------
JFK             MERIT3 CLB          143T   137    1        00.00  ....          94
KENNEDY         5500   P000                      1        00.00  ....          94
115.9 N40 38.0 W073 46.3 WS 4       157M   137                   ....       11406
                                    AWIND........   AGS........   ABURN.........
-----------------------------------------------------------------------------------------------------
TOPC KZBW       DCT    FL250 M037   033T   330    36       00.07  ....        2392
                5500   P000                      37       00.07  ....        2486
        N41 08.6 W073 20.4 WS 4     044M   329                   ....        9014
                WIND/VEC            AWIND........   AGS........   ABURN.........
-----------------------------------------------------------------------------------------------------
MERIT           DCT    FL250 M037   033T   406    17       00.02  ....         224
                5500   P039  M68                 54       00.09  ....        2710
     N41 22.9 W073 08.2 WS4         044M   445                   ....        8790
                WIND/VEC 259043     AWIND........   AGS........   ABURN.........
-----------------------------------------------------------------------------------------------------
TOPD            DCT    FL250 M037   078T   405    36       00.05  ....         461
                5500   P049  M68                 90       00.14  ....        3170
     N41 30.2 W072 21.5 WS 4        091M 454                     ....        8330
                WIND/VEC            AWIND........   AGS........   ABURN.........
-----------------------------------------------------------------------------------------------------
ORW             DCT    DSC          078T   279    17       00.03  ....         114
NORWICH         5500   P035                      107      00.17  ....        3285
110.0 N41 33.4 W072 00.0 WS 4       091M   314                   ....        8215
                                    AWIND........   AGS........   ABURN.........
-----------------------------------------------------------------------------------------------------
OUTTT           ORW6   DSC          069T   279    7        00.02  ....          51
4900 P030 114 00.19 .... 3336
     N41 36.1 W071 50.8 WS 4 083M 309 .... 8164
                                    AWIND........   AGS........   ABURN.........
-----------------------------------------------------------------------------------------------------
PVD             ORW6   DSC          068T   279    20       00.04  ....         146
PROVIDENCE      4900   P020                      134      00.23  ....        3482
115.6 N41 43.5 W071 25.8 WS 4       082M   299                   ....        8018
                                    AWIND........   AGS........   ABURN.........
-----------------------------------------------------------------------------------------------------
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```
POINT  FIR     AWY   FL    OAT      TR/T   TAS     DIST     ETI   ETO     SEGBO
POINT  NAME    MORA  WC    MACH                    TTLD     TTLT  RTO     ACCBO
FREQ   LAT     LONG  SHR                    TR/M    GS             ATO       FOB
-------------------------------------------------------------------------------------------
KRANN          ORW6  DSC            060T   279     16       00.03  ....        121
               4900  P006                          150      00.26  ....       3603
     N41 51.3 W071 07.4 WS 4        074M   285                      ....       7897
                                    AWIND........   AGS........   ABURN.........
-------------------------------------------------------------------------------------------
KBOS           ORW6  DSC   M038     010T           31       00.07  ....       1555
GEN EDWARD LAWRENCE 5500 M015                      181      00.33  ....       5158
     N42 21.8 W071 00.4 WS 3         024M                            ....       6342
                                    AWIND........   AGS........   ABURN.........
ELEVATION 00013FT
ETA/1954 RETA/. . . . ATA/. . . .
-------------------------------------------------------------------------------------------
ATIS - KBOS INFO . . . . .
RWY . . .        WIND . . / . .        VIS . . .   TEMP . . .        QNH . . . .   TL . . . .
-------------------------------------------------------------------
-------------- ENROUTE WIND AND TEMPERATURE SUMMARY ---------------

ROFOR EGCC/KJFK/001
WX PROG DAY/HOUR 1000

POINT  FL100       FL  2XLOWER  FL  1XLOWER    FL  PLANNED   FL  1XHIGHER
D255H  061007M03   32  100027M55 34 097027M59   36 094023M63 38   091017M64

D255M  063007M03   32  100026M55 34  098027M59   36  094023M63 38  091017M64
D255P  064007M03   32  100026M55 34  098027M59   36  095023M63 38  092017M64
LIVSU  066007M03   32  101026M55 34  098026M59   36  095023M63 38  092016M64
WAL    069005M03   32  104025M55 34  101025M59   36  098022M63 38  095015M65
PENIL  102002M03   32  110022M55 34  106023M59   36  103020M63 38  101014M65
BABRA  152002M03   32  112021M55 34  108023M59   36  105020M63 38  104013M65
GIGTO  170002M03   32  113021M55 34  110023M59   36  107019M64 38  107013M65
SOPAX  189004M03   32  116021M54 34  112022M59   36  110019M64 38  111013M65
RAMOX  197006M03   32  119020M54 34  116022M59   36  114019M64 38  117013M65
BAGSO  198010M03   32  125020M54 34  122022M59   36  122019M64 38  127013M65
XETBO  178029M04   32  157023M54 34  160021M58   36  166018M62 38  175016M64
LIMRI  183029M04   32  165024M54 34  169022M58   36  175019M62 38  184017M64
5220N  193038M06   32  197038M53 34  197038M57   36  199039M63 38  203041M65
EEP    195040M05   32  198043M53 34  199044M57   36  201046M63 38  205048M65
5330N  214038M09   32  209082M57 34  210079M60   36  213072M61 38  220064M59
ETP1   196025M14   32  219069M54 34  224063M55   36  228058M56 38  230053M54
5340N  300022M23   32  251042M55 34  244044M56   36  241047M56 38  242050M54
EXP    271023M22   32  263046M57 34  261046M57   36  258047M57 38  255050M54
5250N  240027M22   32  262059M58 34  262058M58   36  260059M58 38  259059M55
TUDEP  228029M20   32  258068M58 34  257065M58   36  256064M58 38  256064M55
EBONY  279024M10   34  254067M54 36  257066M55   38  261065M53 40  264062M51
SEAER  299022M09   34  256060M54 36  259061M55   38  264061M53 40  267060M52
SCARS  307021M08   34  257057M54 36  260058M55   38  264058M53 40  268058M52
ENE    309021M08   34  258056M54 36  261057M55   38  265057M53 40  268057M52
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ASPEN	318018M07	34	253060M54	36	258058M55	38	264057M53	40	268057M52
PVD	320014M06	34	247067M55	36	254061M55	38	261056M53	40	266054M51
TRAIT	323013M05	34	245069M55	36	253060M55	38	261054M52	40	267052M51
PARCH	325013M05	34	243067M54	36	252058M55	38	260053M52	40	267052M50
CCC	336013M05	34	243058M54	36	254051M54	38	263049M51	40	269050M50
ROBER	337012M05	34	242056M53	36	253049M54	38	262047M51	40	268048M50

DESCENT WIND	FL 070	FL130	FL210	FL290
	02016	33013	27024	23058

---------- END OF PLAN ----------

LOW VISIBILITY OPERATIONS - Cat-II /Cat-III TRAINING

OBJECTIVE

To train the crew in procedures and techniques to conduct a safe and efficient takeoff, approach & landings in low visibility conditions; and to provide hands on practice in Category-II / Category-III conditions in the simulator.

ELEMENT AND DURATION

A briefing of one and a half (1½) hour will precede the SIM CAT-II/-III

TRAINING.

SIM CAT-II / CAT-III TRAINING & EVALUATION Three (3) Hours.

TRAINING AIDS

- ♦ White Board and Marker Pens.
- ♦ CAT II /III Approach plates (applicable runway)
- ♦ Low Visibility Operations (FCTM, OM)

GENERAL

- Simulator Instructors will conduct the Low Visibility Operations Briefing in the Simulator's Briefing Room.
- The instructor will conduct the briefing and provide details on the exercises.
- A thorough and comprehensive briefing will reduce the need for coaching during the FFS session, which is rarely constructive, as it tends to distract the trainee from the exercise at hand. It is therefore imperative that whenever there is a need for extensive instruction during the exercise, the simulator should be frozen, and released after the instruction is completed.
- At the end of each session, de-briefing will be conducted by the Instructor, reviewing the performance of the Flight Crew with special emphasis on those maneuvers or procedures where the Flight Crew was found lacking.
- The emphasis will be on crew CO-ORDINATION throughout, with the minimum of distractions for flight profiles etc. enabling the trainee's concentration to be focused on performing the necessary procedures.

- The development of improved all-weather landing capabilities has been accomplished without sacrificing either safety standards or good operating practice. Furthermore, the refinements of automatic flight control systems, including equipment redundancy and fail-operational design for CAT-II /CAT-III conditions, are available for all precision approaches and this contributes to higher levels of overall safety and operating efficiency.
- It is recommended to use the maximum available automatic capacity LAND 3 whenever an automatic precision approach is required, in order to reduce the effect of a component failure on the operational capability.

Initial Qualification

- *Complete the Cat-II /Cat-III A/B Simulator Training.*
- *Successfully demonstrate ILS approaches in CAT II/CAT III A/B condition in the Simulator for his/her Evaluation.*
- *Demonstrate at least 1 ILS approach in under supervision flying (auto-land) using CAT-II/CAT-III A/B procedure in non-actual condition.*
- *The Captain/First Officer will be cleared to operate down to CAT-II/CAT-III A/B minima after completion of 100 hours on type followed by a CAT-II/CAT-III A/B simulator check or during first recurrent simulator training/check.*

CAT-III TRAINING

Pre Session Briefing	DH Philosophy			
	RVR Philosophy			
	Relationship between DH & RVR			
	Task Sharing			
	The decision process			
	Loss of references below DH			
	Minimum equipment			
	Cat II/ cat III Crew qualification requirements			
	CAT-II/CAT-III Certification			
	ATC Calls			
	Seat Position			
	Use of Taxi / Landing lights			
	CAT-II/CAT-III Briefing			
	Failure & associated actions			
	Down grading conditions			
	Auto Flight operating limitations			
	Aircraft requirements			
	Approach & Runway lighting			
Weather	CALM	<400 MTRS	TEMP 2ºC	QNH 1013
Airport /Runway /Condition	MANCHESTER 23R		DRY	
	TOM-230 T		Flaps – 30	CG – 25%

RANK & NAME	**DATE:**	**PLND.TRG TIME** 03:00	**ACTUAL TRG TIME :**

COMMENTS:

NAME OF INSTRUCTOR	**SIGNATURE**	**TRAINEE'S SIGNATURE**

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777 TRAINING RECORD
LOW VISIBILITY OPERATION QUALIFICATION
FFS Lesson

NAME	P-NO	CREW POSITION PF/PM	PLND TRG TIME 03 00	ACTUAL TRG TIME	TOTAL TIME

Training Item	Scheduled Repetitions	Actual Repetitions	Rating		Training Item	Scheduled Repetitions	Actual Repetitions	Rating	
			PF	PM				PF	PM
Briefing (cockpit prepared by Instructor)					LOC DEV below DH CAT III	1			
SMGCS taxi	1				G/S DEV above DH CAT III	1			
Low visibility takeoff	1				CAT II/III App with Grnd Equipment Failure	1			
CAT II/III, ILS approach (approach light demonstration)	1				Auto landing with engine fail L/R (Full stop)	1			
Full stop landing (Auto land)	1				CAT II/III, ILS approach	1			
CAT-III, ILS approach	1				SINGLE SOURCE ILS (BELOW 500)	1			
Missed approach	1				SINGLE SOURCE ILS Radio Altimeter	1			
A/P, CAT-III, ILS approach	1				Other instrument failure scenarios	1			
Full stop landing	1				Piloting incapacitation	1			
Low visibility RTO (ENG FAIL, TAC on)	2				Missed approach	2			
Low visibility takeoff (Engine failure after V1, TAC off)	1				CAT-III, ILS approach	1			
ENG FAIL (L/R) TAC off	1				Rejected landing	1			
App with Eng Fail below AH	1				CAT-III, ILS approach	1			
Fail Passive Approach with auto Pilot Disconnect below DH (300m or Less RVR)	1				Taxi-in				
CAT II/III Approach with Reversion to Higher Minima	1				Shutdown				

Comments (Required for all items not scored satisfactory):

DATE	INSTRUCTOR NAME (CAA INSPECTOR / DCP-A / SIM INSTRUCTOR)	INSTRUCTOR SIGNATURE

PREFLIGHT
Accomplished by the instructor
Complete all required CDU entries
NAV/RAD, MCP and flight instrument preflight.
ENGINE START
Fast start accomplished by the instructor
LOW VISIBILITY TAXI OUT AND TAKE OFF
Normal procedures
Taxi in low visibility condition – *As per SOP*
In taxi position RWY 23 R
Surface Movement Guidance and Control System (SMGCS)
Low Visibility Taxi Procedures
Bear in mind that, in very low RVR values, one would expect to see bright lights at a safe distance but not unlit or poorly lit obstacles, such as aircraft tails or wing tips. from certain angles, their navigation lights do not show up well. Since aircraft movement rates will be low in these conditions, taxi as slowly as necessary for safety. Do not hesitate to request from ATC the positions of other taxing aircraft or to ask for a "follow me" car.
Stop Bar lighting
Taxi routes, lighting, and surface markings
Low Visibility Take Off
A takeoff on Runway where the RVR is less than 400 m (EU - OPS1) Consult concept and definition and flight crew procedure defined in SOP.

TAKEOFF RVR/VIS
The takeoff minima is mainly determined by the airport installation (RWY lighting system, RVR measurement system)
Weather at Destination & Alternate
Rejected Takeoff Consideration
Low visibility takeoff operations, below landing minima, may require a takeoff alternate. When selecting a takeoff alternate, consideration should be given to unexpected events such as an engine failure or other non-normal situation that could affect landing minima at the takeoff alternate. Operators, who have authorization for engine inoperative Category II/III operations, may be authorized lower alternate minima. (Normally within one hour for Twin engine).

With proper crew training and appropriate runway lighting, takeoffs with RVR as low as 125m / 150m for category C / D respectively are authorized by PCAA.

With takeoff guidance systems and centreline lighting that meets FAA or ICAO criteria for Category III operations, takeoffs with visibility as low as 300ft/75m RVR may be authorized, NOT AVIALABLE ON B777 PIA AIRCRAFTS. Regulatory agencies may impose takeoff crosswind limits specifically for low visibility takeoffs.

All RVR readings must be equal to or greater than required takeoff minima. If the touchdown RVR system is inoperative, the pilot estimation of RVR may be authorized by regulatory agencies.

If it is necessary to reject the takeoff and visibility is very limited, directional control with reference to the runway lights will become progressively more difficult as speed is reduced.

As soon as the first red/white centreline lights pass under the nose of the aircraft, there is 3000'/900 m of runway left and ground speed should be in no case higher than 100 kts.

If all centreline lights are red, there is less than 1000'/300m of runway available.

DEMONSTRATION OF APPROACH LIGHTING

Autopilot, CAT II / III, ILS approach RWY 23 R, full stop landing

At the following RA heights, freeze the simulator to

Demonstrate approach lighting.

Show DAY and NIGHT conditions.

CAT I	*449* (200') *BARO*	RVR 550m
CAT II	100' RA	RVR *350*m
CAT IIIa	50' RA	RVR 200m
CAT IIIb	WITH OR WITHOUT DH,	RVR 75m

Seating Position

As a rule, it can be said that sitting 1 centimetre too low results in a reduction of the cut-off angle of 1 degree, corresponding to a loss of 10m of the visual segment from a height of 100 feet. Further lowering of the seat position will aggravate the situation because of a greater reduction of the visual segment.

A pilot sitting too low will also have the tendency to pitch down the aircraft in order to acquire additional ground visibility.

This will usually lead to a very dangerous situation: Unstablised aircraft with a high rate of descent.

Complete AUTOLAND and ROLLOUT.

APPROACH AND LANDING

Autopilot, CAT II/cat III ILS approach
RWY 23 R missed approach
Configuration
Flaps 20 or 30
Select auto brakes 2 or 3
Use of landing lights

APPROACH BRIEFING

Complete the approach preparation before arrival in the terminal area.
CAT II /CAT-III approach plate.
Radio altitude (R/A) vs. barometric altitude.
CAT II DA (H) – 100 feet /cat III DH OF 50 FT radio altitude (where authorized)
Check that the marker beacon is selected on the audio panel. The course and glide slope signals are reliable only when their warning flags are not displayed, localizer and glide slope pointers are in view, and the ILS identifier is received. Confirm the published approach inbound course is set or displayed.

Prior to the start of an instrument approach, the pilot flying should brief the other pilot as to intentions in conducting the approach. Both pilots should review the approach procedure. All pertinent approach information, including minimums and missed approach procedures, should be reviewed and alternate courses of action considered.
As a guide, the approach briefing should include at least the following:

- Weather and NOTAMS at destination and alternate, as applicable.
- Type of approach and the validity of the charts to be used
- Navigation and communication frequencies to be used
- Minimum safe sector altitudes for that airport
- Approach procedure including courses and heading
- Vertical profile including all minimum altitudes, crossing altitudes and approach minimums
- Determination of the Missed Approach Point (MAP) and the missed approach procedure
- Other related crew actions such as tuning of radios, setting of course information, or other special requirements.
- Taxi routing to parking.

- Any appropriate information related to a non-normal procedure
- Management of AFDS.

APP mode should not be selected until:

- The ILS is tuned and identified
- The airplane is on an inbound intercept heading
- Both localizer and glide slope pointers appear on the attitude display in the proper position
- Clearance for the approach has been received.

The glide slope may be captured before the localizer in some airplanes. The glide slope may be captured from either above or below. Glide slope capture does not occur if the intercept angle to the localizer is greater than 80°. The maximum intercept angle for the localizer is 120 °. To avoid unwanted glide slope capture, LOC mode may be selected initially, followed by the APP mode. (Glide slope inhabited before localizer capture 04.10.15)

When using LNAV to intercept the final approach course, ensure raw data indicates localizer interception to avoid descending on the glide slope with LOC not captured. If needed, use HDG SEL/TRK SEL or HDG HOLD/TRK HOLD to establish an intercept heading to final approach course.

Standards callouts

DA (H) – MINS selector on RADIO ALTIMETER/ BARO

CAT II required equipment

Second-in-command duties during CAT II/CAT III approaches

The pilot monitoring should continue standard callouts during final approach and the pilot flying should acknowledge callouts.

IF NO AUTO CALLS (PM to make standard calls as define in AWOPS)

AUTOLAND PROCEDURE

Auto land status annunciator

Below 1500 FEET RADIO ALTITUDE

FLARE and ROLLOUT armed ASA display LAND 2/3

Autopilot control of the rudder

500 FEET TO 200 FEET RADIO ALTITUDE

(Crab angle >10◦, 5◦ - 10◦ & <5◦) Depending on the strength of the crosswind, the amount of forward slip induced is limited to 5◦.

Runway align maneuver

Effect on control when reverting to manual landing

50 FEET RADIO ALTITUDE (60' to 40') FLARE ENGAGED GREEN (Flare capture)
50-25 FEET RADIO ALTITUDE
A/T retards THRUST LEVERS & THRUST IDLE engage
PFD auto throttle FMA changes – SPD to IDLE
2 FEET RADIO ALTITUDE WINGS ARE LEVELLED
ROLLOUT CAPTURES
Roll out not demonstrated on contaminated runway and AFDS Roll-Out mode performance cannot be assured.
FLARE annunciation disappears at touchdown
ROLLOUT replaces LOC capture annunciation.
A/T disengages with reverse thrust.

Autopilot Missed Approach
GA switch
Flight Mode Annunciations
Pitch and roll commands activate in GA
Flap retraction
Missed approach waypoints
LNAV use
Missed approach

- Push TO/GA switch (AFDS)
- Flaps 20 (flaps 5 optional 1 engine)
- Go-around attitude
- Go-around thrust
- Positive rate of climb, gear up
- Above 400 feet select roll mode (AFDS)
- At flaps retraction altitude, set speed for desired flap setting
- Retract flaps on schedule
- After flap retraction, select FLCH or VNAV as required
- Verify tracking route and altitude capture
- After Takeoff checklist

If an auto land annunciation changes or system fault occurs above ALERT HEIGHT that requires higher weather minimums (reversion to NO AUTOLAND), do not continue the approach below these higher minimums unless suitable visual reference with the runway environment is established.

Autopilots having failed operational capability are designed to safely continue an approach below ALERT HEIGHT after a single failure of an autopilot element. The autopilots protect against any probable system failure and safely land the airplane. AFDS design provides for an AH of at least 200 feet HAT but may be modified to a lower value by operators. The pilot should not interfere below AH unless it is clearly evident pilot action is required.

Alert Height

Is evaluated during aircraft certifications.

Alert heights are normally used for fail operational Category III operations. Alert height is a height above the runway, above which a Category III approach must be discontinued and a missed approach initiated if a specified failure occurs in one of the redundant parts of the Auto Landing System or in the relevant ground equipment.

Fail Operational

Fail operational refers to an AFDS capable of completing an ILS approach, auto land, and rollout following the failure of any single system component after passing alert height.

Fail Passive

Fail passive refers to an AFDS which in the event of a failure causes no significant deviation of airplane flight path or attitude. A DA (H) is used as approach minimums.

Recommended elements of a Stabilized Approach

The following recommendations are consistent with criteria developed by the Flight Safety Foundation.

All approaches should be stabilized by 1,000 feet above airport elevation in instrument meteorological conditions (IMC). An approach is considered stabilized when all of the following criteria are met:

- The aircraft is on the correct flight path,
- Only small changes in heading/pitch are required to maintain the correct flight path,
- The aircraft speed is not more than VREF+10 knots indicated airspeed and not less than VREF,
- The aircraft is in the correct landing configuration
- Sink rate is no greater than 1,000 fpm; if an approach requires a sink rate greater than 1,000 fpm, a special briefing should be conducted.
- Power setting is appropriate for the aircraft configuration.

- All briefings and checklists have been conducted.

As the aircraft crosses the Runway Threshold it should be:

- Stabilized on target airspeed to within + 10 knots until arresting descent rate at flare.
- On a stabilized flight path using normal maneuvering
- Positioned to make a normal landing in the touchdown zone (the first 3,000 feet or first third of the runway, whichever is less).

Mandatory Missed Approach

On all instrument approaches, execute an immediate missed approach:

- If a navigation radio or flight instrument failure occurs which affects the ability to safely complete the approach in instrument conditions
- When on ILS final approach, in instrument conditions, and either the localizer or glide slope indicator shows full deflection
- When the navigation instruments show significant disagreement and visual contact with the runway has not been made
- When on an RNP based approach, and an FMC alerting message indicates that ANP exceeds RNP
- When on a radar approach and radio communication is lost.

APPROACH AND LANDING

Autopilot, CAT-II /CAT-III ILS approach
RWY 23 R full stop landing
CONFIGURATION
Flaps 20 or 30
Select auto brakes 2 or 3
Use of landing lights
DECISION HEIGHT DA (H) RECOGNITION
    DA (H) callouts – PM voice backup
RVR information and limitations
RA display/authorization/inoperative
CHARACTERISTICS OF ILS AND RUNWAY LIGHTING SYSTEMS
Runway lighting systems required for CAT-II/CAT-III
USE OF VISUAL CUES UNDER REDUCED RVR
Conditions required to descend below DA (H) or AH
Descent to runway/touchdown zone
Visual references
Approach light system

Threshold markings
REIL, VASI, TDZ marking/lights
RWY marking/lights
PROCEDURES/TECHNIQUES TO TRANSITION FROM NON-VISUAL TO VISUAL FLIGHT UNDER REDUCED RVR
PM procedures
Flare and touchdown
SMGCS taxi procedures.

LOW VISIBILITY / TAKE OFF
TAKEOFF WITH ENGINE FAILURE BEFORE & AFTER V1
TAKEOFF WITH SUDDEN REDUCTION OF RVR
TAKEOFF WITH LOSS OF LATERAL GUIDANCE
(Introduce Pilot Incapacitation during takeoff / landing)

In takeoff position RWY 23 R
TAC ON
LOW VISIBILITY REJECTED TAKE OFF (RTO), RVR < 400M
Timely engine failure recognition
Reasons for reject (high speed/low speed)
PM call out malfunction and 60 knots
Auto brake use
Speed brake use
ACTIONS AFTER STOPPING
Notify tower
Notify passengers/cabin crew
Perform non-normal checklist (if required)
Evacuate the airplane (if required)
Taxi clear of runway (if appropriate)
Review Brake cooling schedule

LOW VISIBILITY TAKE OFF, ENGINE FAILURE AFTER VI,
RVR < 400M
TAC on
ENGINE FAIL (L/R)
LOW VISIBILITY TAKE OFF, RVR < 400M

APPROACH AND LANDING (MISSED APPROACH)

Autopilot, CAT-II/CAT-III ILS approach RWY 23 R
SINGLE SOURCE ILS
(Left and right ILS receivers fail)
EICAS ANNUNCIATIONS;
AUTOPILOT DISCONNECT
SINGLE SOURCE ILS
NO AUTOLAND

INSTRUMENT AND EQUIPMENT FAILURE WARNING SYSTEM
Autopilot disengages
Flight Director Bias out of view
Respective electronic display
PF, PM procedures
Positive monitoring
Non-normal procedures/indications/actions

APPROACH AND LANDING

Autopilot, CAT II/CAT III, ILS approach RWY 23 R full stop landing

A working knowledge of approach lighting systems and regulations as they apply to the required visual references is essential to safe and successful approaches. Touchdown RVR is normally controlling for Category I, II, and III approaches. For Category I and II approaches, mid and rollout RVR are normally advisory. For Category III operations mid and rollout RVR may be controlling. In some countries, visibility is used instead of RVR. (Approval from the regulatory agency is required to use visibility rather than RVR.)

CAT-II / CAT-III APPROACH & LANDING VISIBILITY REQUIREMENTS

CAT-II DA (H) – 100 FEET RADIO ALTITUDE & RVR 350m (where authorized)
CAT-III A DA (H) – 50 FEET RADIO ALTITUDE & RVR 200m (where authorized)
CAT-III B DA (H) WITH OR WITHOUT DH AND RVR 75m (where authorized)

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CAT-II / CAT-III AUTHORIZATION

Refer to concept and definition, flight crew procedure.

NOTAMS and ATIS for ILS performance and status or degradation
Airplane condition: systems status and CAT II/CAT-III MEL status
Standard callouts per flight Crew training Manual Approach profile and go-around procedures.
Consideration of rollout conditions, including visibility, runway exiting, Use of landing lights. Refer to flight crew procedure

CAT-II/CAT-III APPROACH TECHNIQUES

Select auto brakes 2 or 3 (start APU at 10000 Optional)
Check winds (per regulatory authority)

Max. Headwind 25 knots
Max. Tailwind 10 knots
Max. Crosswind 25 knots

Flaps 30 or 20 (30 will be flatter for visibility)
Captain makes all CAT II/CAT-III approaches and landings

CAT-II/CAT-III OPERATIONS

Category II approaches may be conducted using the autopilot or flight director with HUDLS only (FAA), with one or two engine.
PIA POLICY. Auto Landing System should be serviceable for CAT-II approach & landing. (Check MEL, DDPG)
CAT-III APPROACH Auto landing system is mandatory
The following equipment must be operative for an automatic approach in **Category II**
Conditions:
LAND 3 or LAND 2 annunciated and EICAS messages SGL SOURCE DISPLAY, SGL SOURCE RAD ALT or SGL SOURCE ILS not displayed.

CAT-III OPERATIONS

CAT-III operation is based on an approach to touchdown using the automatic landing system. Normal operations should not require pilot intervention. However, pilot intervention should be anticipated in the event inadequate airplane performance is suspected. or when an automatic landing cannot be safely accomplished in the touchdown

zone. Guard the controls on approach through the landing roll and be prepared to take over manually, if required.

The airplane is certified for CAT IIIB operations with two engines operating or with one engine operating for flaps 20 or flaps 30 landing.

CAT-IIIa / Auto land

For CAT IIIa operations the following equipment must be operative and LAND 3 or LAND 2 annunciated.

- 2 autoland status annunciators (ASA)
- EICAS message SGL SOURCE DISPLAY, SGL SOURCE RAD ALT or SINGLE SOURCE ILS not displayed.

CAT-IIIb / Auto land

For CAT-IIIb operation, visual reference is not normally a specific requirement for continuation of the approach to touchdown
CAT-IIIb operations require the following equipment to be operative and LAND 3 annunciated:
- auto throttle engaged
- 2 auto land status annunciators
- EICAS message SGL SOURCE DISPLAY, SGL SOURCE RAD ALT or SINGLE SOURCE ILS not displayed.

Automatic Flight EICAS Messages

The following EICAS messages can be displayed.

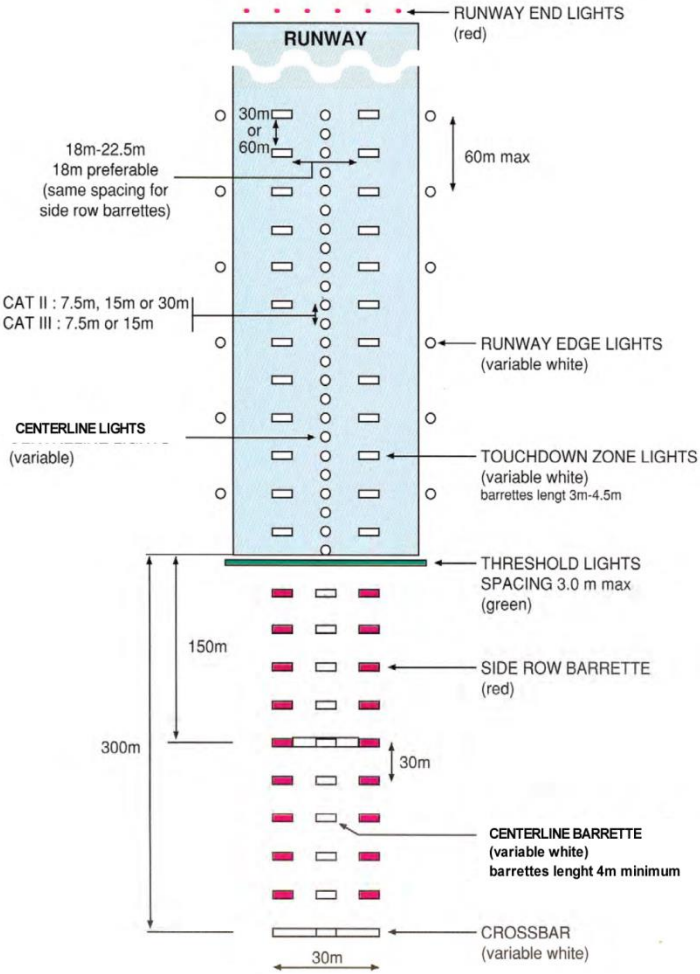
Message	Level	Aural	Condition
AUTOPILOT	Caution	Beeper	Autopilot is operating in a degraded mode. Engaged roll and / or pitch mode may have failed, or the autopilot has entered envelope protection.
AUTOPILOT DISC	Warning	Siren	Autopilot has disconnected.
AUTOTHROTTLE DISC	Caution	Beeper	Both auto throttles have disconnected.
AUTOTHROTTLE L, R	Advisory		Affected auto throttle is OFF or has failed.
NO AUTOLAND	Caution Advisory	Beeper	Auto land is not available. Message is a caution if fault occurs after LAND 3 or LAND 2 is annunciated, or approach has been selected but does not engage by 600 AGL. Message is an advisory if fault occurs before LAND 3 or LAND 2 is annunciated.
NO LAND 3	Caution Advisory	Beeper	Auto land system does not have redundancy for triple channel auto land. Message is a caution if fault occurs after LAND 3 is annunciated. Message is an advisory if fault occurs before LAND 3 is annunciated.

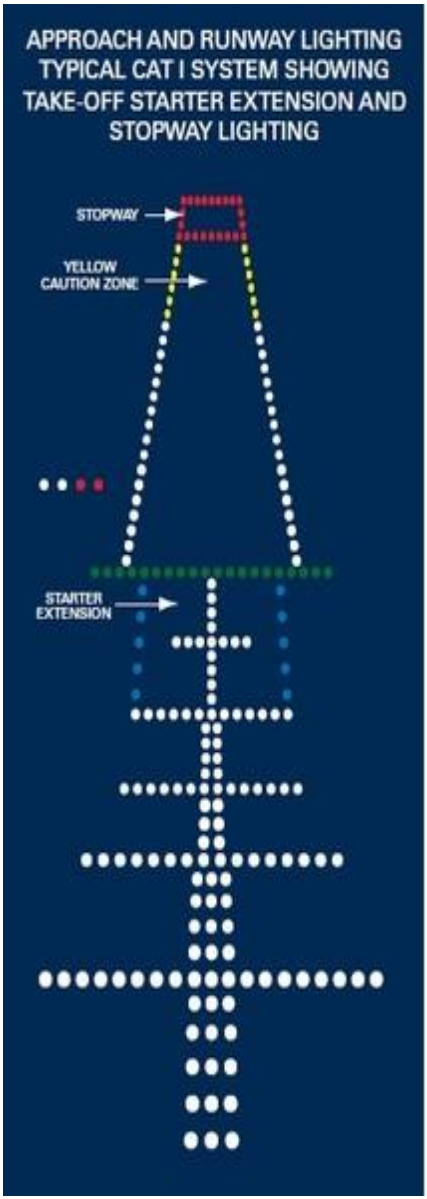
AFDS Faults

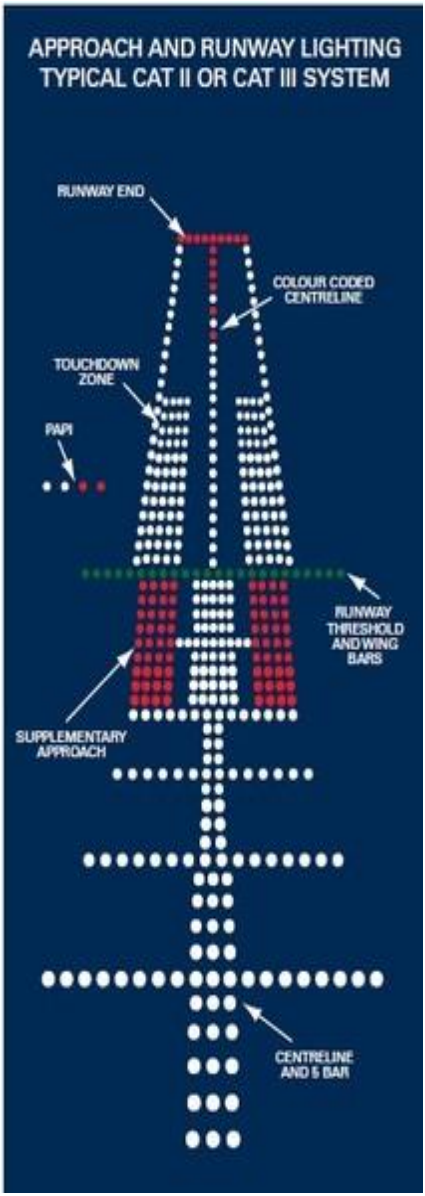
Consult the FCTM, Flight preparation and flight crew procedure (SOP).

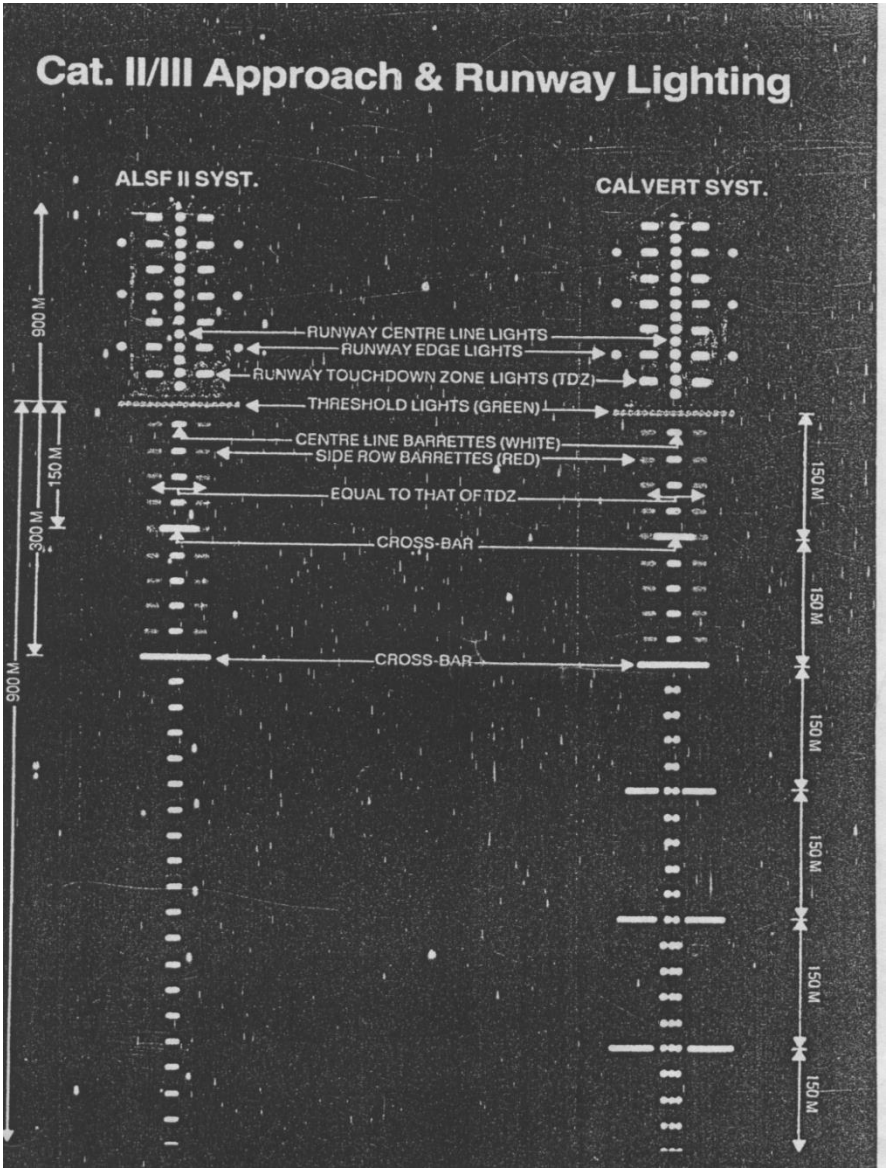
CAT II/III APPROVAL PROCESS

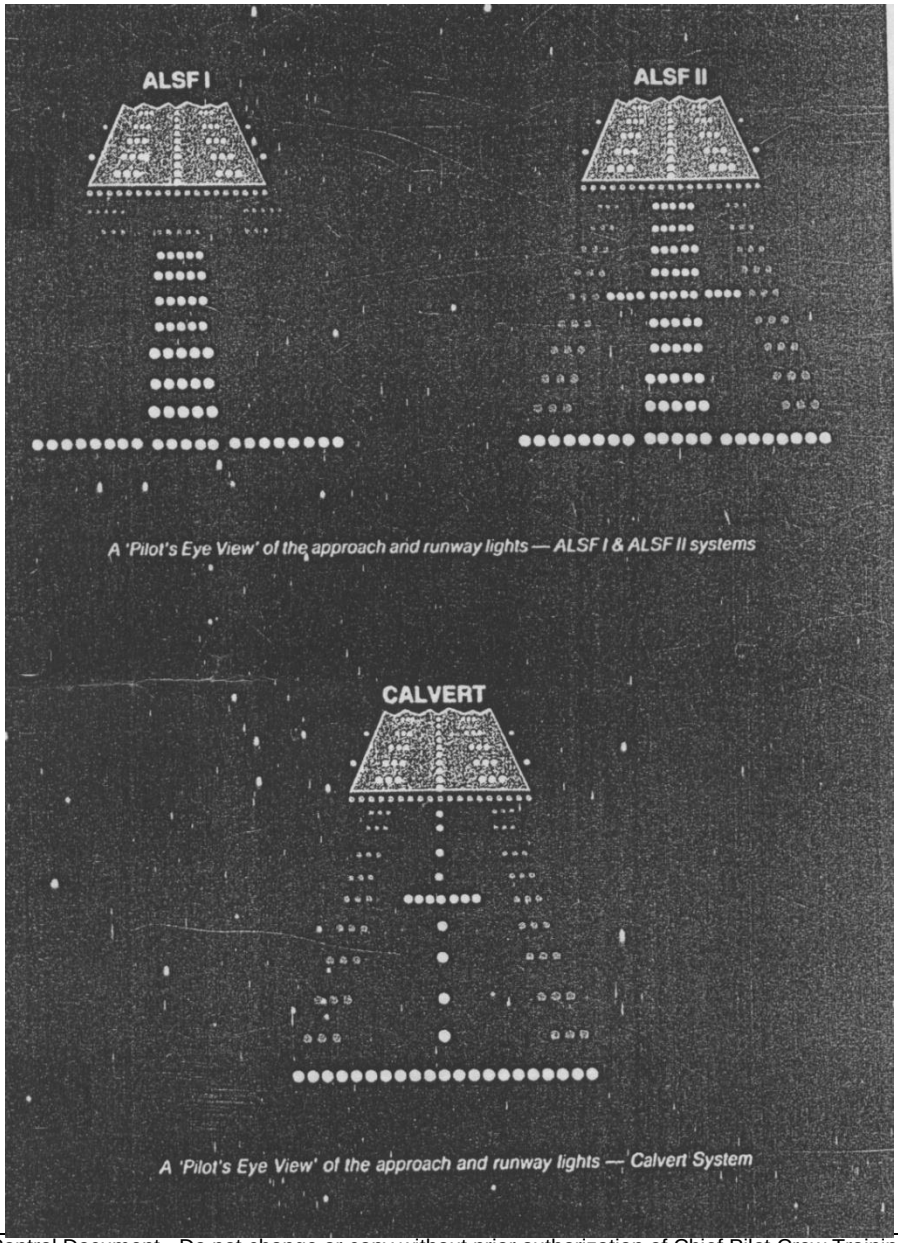
Figure 5.4 Runways lights / Approach light system




APPROACH AND RUNWAY LIGHTING TYPICAL CAT I SYSTEM SHOWING TAKE-OFF STARTER EXTENSION AND STOPWAY LIGHTING
STOPWAY
YELLOW CAUTION ZONE
STARTER EXTENSION

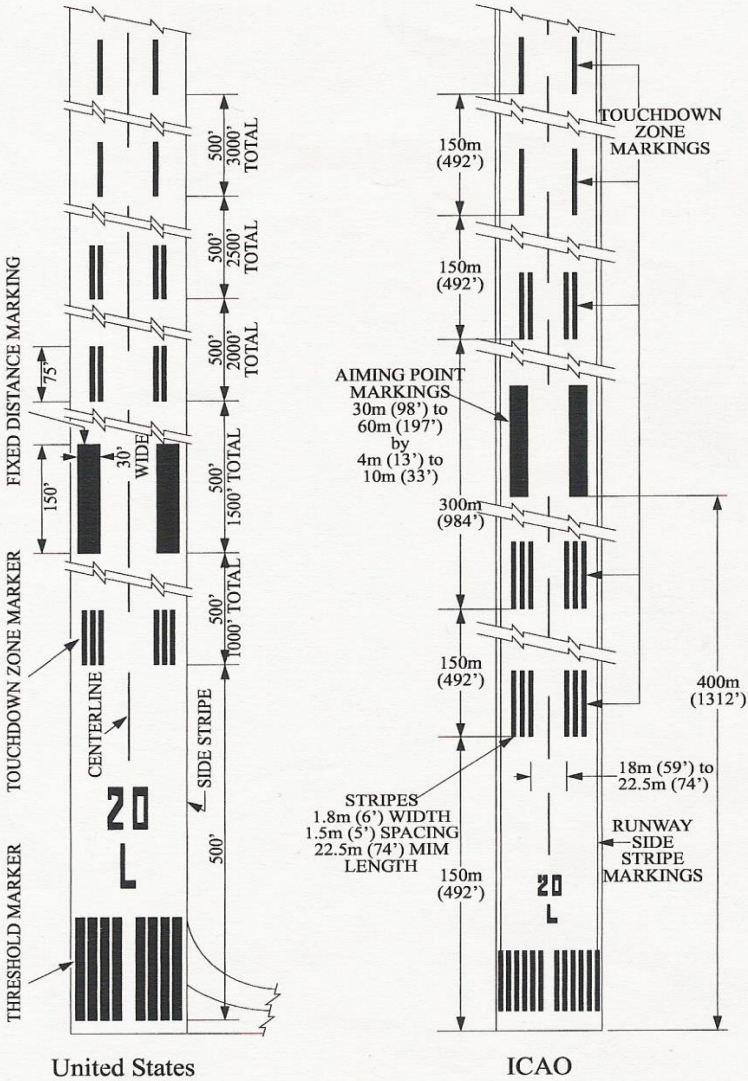

APPROACH AND RUNWAY LIGHTING TYPICAL CAT II OR CAT III SYSTEM
RUNWAY END
COLOUR CODED CENTRELINE
TOUCHDOWN ZONE
PAPI
RUNWAY THRESHOLD AND WING BARS
SUPPLEMENTARY APPROACH
CENTRELINE AND 5 BAR


Cat. II/III Approach & Runway Lighting
ALSF II SYST.
CALVERT SYST.
RUNWAY CENTRE LINE LIGHTS
RUNWAY EDGE LIGHTS
RUNWAY TOUCHDOWN ZONE LIGHTS (TDZ)
THRESHOLD LIGHTS (GREEN)
CENTRE LINE BARRETTES (WHITE)
SIDE ROW BARRETTES (RED)
EQUAL TO THAT OF TDZ
CROSS-BAR
CROSS-BAR
900 M
150 M
300 M
900 M
150 M
150 M
150 M
150 M
150 M
150 M


ALSF I
ALSF II
A 'Pilot's Eye View' of the approach and runway lights — ALSF I & ALSF II systems
CALVERT
A 'Pilot's Eye View' of the approach and runway lights — Calvert System

Landing Runway Markings (Typical)

The following runway markings are for runways served by a precision approach.



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