EUROPEAN ORGANISATION
FOR THE SAFETY OF AIR NAVIGATION

EUROCONTROL

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Approach Control Surveillance Rating with Radar and Terminal Endorsements - Training Plans

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Abstract

This document enables the creation of an Air Traffic Controller (ATCO) initial training compliant with the European Air Traffic Management Programme (EATMP) Common Core Content. It provides an example of a training programme of 443 periods corresponding to the approach surveillance training with Radar and Terminal Area (TMA) endorsements. It includes description of a training area, simulation test and the training procedures.

Keywords

Air Traffic Controller (ATCO)	Terminal Area (TMA)	En-route
Air Traffic Control (ATC) Harmonisation	Course Design	Course Objective
Job Analysis	Air Traffic Control Procedure	Evaluation
Test	Licensing	Training Program
Simulation Program		

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DOCUMENT CHANGE RECORD

The following table records the complete history of the successive editions of the present document.

EDITION NUMBER	EDITION DATE	INFOCENTRE REFERENCE	REASON FOR CHANGE	PAGES AFFECTED
0.5	06.05.2002		First completed Working Draft	All
0.6	06.09.2002		Proposed Issue for submission to HRT18 (basic document configuration)	All
1.0	30.01.2003	021125-02	Released Issue (agreed at HRT18 on 09.10.2002) (advanced document configuration + final editorial changes)	All

CONTENTS

EXECUTIVE SUMMARY

This document is the final report of Drafting Group 8 (DG8) of the Task Force Common Core Content (TF-CCC) of the EATCHIP\EATMP[1] Human Resources Team (HRT) Training Sub-Group (TSG).

It presents the training plans for 'Approach Control Surveillance Rating with Radar Endorsement' (Module 6) and 'Terminal Control Endorsement' (Module 8).

These training plans are an example of a training strategy to meet the training objectives stated in the document 'Guidelines for Common Core Content and Training Objectives for Air Traffic Controllers Training (Phase II)' (EATMP, 2000a – T14). This strategy produces a training whose duration is a total of 443 periods for Modules 6 and 8.

There are two tracks to the Terminal Control Endorsement (Module 8): one from Area Control Surveillance Rating (Module 7) and one from Approach Control Surveillance Rating (Module 6). Because of the differences between Modules 6 and 7, two sets of training plans have been developed for Module 8.

Section 1, 'Introduction', explains the background and the training documentation configuration.

Section 2, 'ATM Performance Objective for Module 6', details the performance expected from the student in simulation at the end of the training, the airspace in which the simulation is operated and the content and workload of a typical simulation located at the end of the training (possibly a final test simulation). The procedures are detailed in Annex B.

Section 3, 'ATM Performance Objective for Module 8', details the performance expected from the student in simulation at the end of the training, the airspace in which the simulation is operated and the content and workload of final test simulation (possibly a final test simulation). The procedures are detailed in Annex C.

Section 4, 'Training Plan for Module 6', has two parts'. First part, 'Time Scale', proposes an example of a training programme, with the number of training events per subject, classified according to the training methods to be used. Second part, 'Training Requirements', states how each objective is taught to the student (lesson, part-task practice, simulation, etc.). Annex D details the workload of the typical final simulation.

Section 5, 'Training Plan for Module 8', has two parts. First part, 'Time Scale' proposes an example of a training programme, with the number of training events per subject, classified according to the training methods to be used. Second part, 'Training Requirements', states how each objective is taught to the student (lesson, part-task practice, simulation, etc.). Annex D details the workload of the typical final simulation.
The Training Plan for Module 8 is applicable to the student coming from Module 6. The Training Plan applicable to the student coming from Module 7 is described in the document entitled 'Area Control Surveillance Rating with Radar and Terminal Endorsements

[1] The 'European Air Traffic Control Harmonisation and Integration Programme (EATCHIP)' has later become the 'European Air Traffic Management Programme (EATMP)'

– Training Plans' (see EATMP, 2001a – T17). To avoid confusion between the two Training Plans, the names 'Training Plan 8/6' and 'Training Plan 8/7' may be used.

Annex A, 'EATMP Common Core Content Concepts', is valid for use with any previous Common Core Content syllabus and training plan. It defines the concept of training events, the phases and the taxonomy for ATCO training.

References and Further Reading, a Glossary of the Abbreviations and Acronyms used in this document, and the names of those who contributed to it can be found at the end of this publication.

1. INTRODUCTION

1.1 Background

The main objective of the EATMP Human Resources Programme (HRS) Stage 1 (see EATMP, 2000b – O3) is to further develop an ATM specific human resources / human factors toolbox (concepts, methods, tools) which will enable an adequate number of qualified staff to provide a harmonised and consistent service delivery, ensure the best use of new technology and provide for a smooth transition towards the evolving European ATM systems.

The HRS Programme Phase 1 includes the Training Sub-Programme (TSP), defined as follows:

> *To provide ANS Providers for all ATM areas with training material, methods and tools to enable a common minimum standard of training which will evolve to meet the future introduction of system changes and will enable the implementation of regulatory requirements for ATM services personnel licensing.*

1.2 Task Force Common Core Content

Under the auspices of the EATCHIP Programme and later the EATMP Programme, the Human Resources Team (HRT) delegated responsibility for the Air Traffic Services (ATS) training to its Training Sub-Group (TSG), which created the Task Force Common Core Content (TF-CCC) in March 1995.

The training addressed by the TF-CCC was divided into phases.

1.3 Training Phases in ATC Training

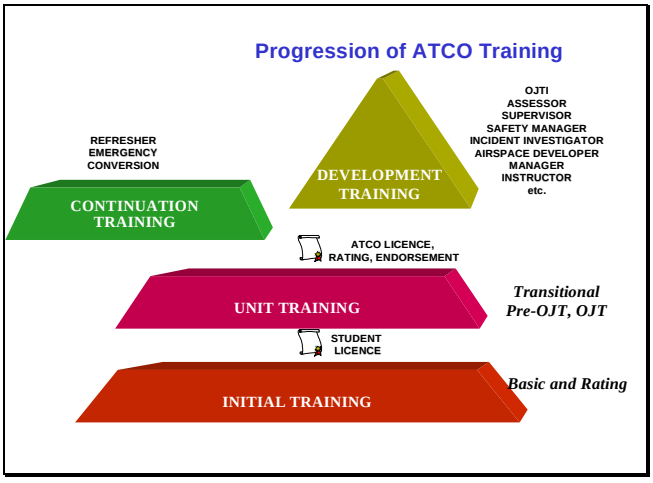

Figure 1: Progression of ATCO Training

Initial training

Training including technical subjects and ATC theory and simulator practice. The object of initial training is to prepare an *ab initio* for training at an ATC unit. It includes two phases (basic and rating) leading to a student licence:

⇨ **Basic training**

Training designed to impart fundamental knowledge and skills to enable *ab initio* air traffic controllers to progress to specialised ATC training.

⇨ **Rating training (training in the rating discipline)**

Specialised ATC training to provide knowledge and skills related to a job category and appropriate to the discipline to be pursued in the ATS environment.

Other Phases

The other phases are defined in Sections 3.1 to 3.4 of Annex A, 'EATMP Common Core Content Concepts'.

1.4 Structure of the EATMP Training Documentation

The structure of the training documentation was defined in the document 'Specifications on Training Methods and Tools' (EATMP, 2000c – T16) as follows:

1.4.1 Syllabus

A syllabus is a list of training objectives classified by subjects, topics and sub-topics showing the training necessary to fill the training gap and achieve the course aim. An unstructured content helps to detail the objectives. Syllabus does not indicate times, training techniques nor order to achieve the training objective.

1.4.2 Training Plan

A training plan is a syllabus with additional information. The training plan details for each subject or topic and for each objective the training requirements (type of training event, educational material needed, method and mode of delivery). It also mentions the time scale for achievement and states performance objectives or tests to increase the accuracy of the specifications.

1.4.3 Training Event Plan

A training event is a set of actions identified in the training plan as the smaller unit of training. The training event has a type but is more accurately described

by the association of a training method, a media, a learning rate and a mode of delivery.

The training event plan is the document to be used by the instructor when preparing and when providing the training. It recalls the objectives of the training event and its type. It gives a timeline and indicates material references and hints for the performance.

1.5 Purpose of this Document

The syllabi for ATCO initial training Phases 1 and 2 specify the objectives of the corresponding initial training. This specification does not include performance objectives or time scale.

The document entitled 'European Manual of Personnel Licensing - Air Traffic Controllers: Guidance on Implementation' (EATMP, 2001b – L2) states that

> *the designated authority should require training institutions to demonstrate how their courses meet the ECAC[2] guidelines on Common Core Content or, if they cannot, their plans to amend their training to meet the requirements*.

The EUROCONTROL Safety Regulatory Requirement 5 (ESARR5) (SRC, 2000) lists the TF-CCC documents as a 'means of compliance' with the Regulatory Requirements.

The purpose of this document is to define the training modules more accurately than the syllabus in order to allow training institutes to develop initial training according to the ECAC guidelines.

The expected benefits are:

- the reduction of time and effort to develop training,
- the possible reuse of off-the-shelf training materials,
- the guidance for the demonstration of the compliance to the guidelines.

To achieve this and according to the training plan definition, this document includes:

- the performance objective in the ATM subject,
- the time scale,
- the training requirements.

[2] European Civil Aviation Conference

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2. ATM PERFORMANCE OBJECTIVE FOR MODULE 6

2.1 Objective

The general ATM objective stated in the syllabus is:

> *Students shall apply operational procedures to ensure a safe, orderly and expeditious service.*

The corresponding performance objective is:

In a radar simulator, students shall:

- demonstrate the ability to manage the specified workload demand within the specified APP area of responsibility;
- apply operational radar and planning control techniques and procedures to ensure a safe, orderly and expeditious service to arriving, holding, departing and transiting aircraft.

2.2 Duties of Students

This paragraph describes the duties of students when acting as planner and executive controllers in the Approach Control Surveillance rating with Radar endorsement.

2.2.1 Generic Duties

<u>Duties Common to both the Executive Controller and the Planner Controller</u>

- Adjust the relevant displays so that control functions can be performed properly and notify the instructor of any technical failure.
- Analyse, plan and control the flow of traffic by use of system and radar-derived information.
- Detect potential conflicts between aircraft by use of system and radar-derived information.
- Provide and maintain the prescribed separation between aircraft, between aircraft and airspace boundaries and between aircraft and terrain.
- Manage several coinciding tasks while maintaining situational awareness.
- Monitor and ensure flight data displays are maintained up-to-date.
- Prioritise tasks and delegate when appropriate.

- Communicate in a clear and precise manner using standard phraseology when available.

- Ensure that all co-ordinations are carried out in accordance with prescribed procedures.

- Manage complete or partial communications failures.

- Assist and give priority to aircraft in unusual/emergency situations and take all actions necessary to ensure aircraft safety.

Specific duties for the Executive Controller

- Maintain a continuous listening watch on the sector frequencies and carry out all Radiotelephone (RTF) communication.

- Take the necessary control actions within the sector's area of responsibility to comply with the plan established by the Planner Controller.

- Liaise with the Planner Controller when planned exit levels cannot be achieved.

- Ensure the Planner Controller is warned that the traffic situation is developing to the extent that the sector could be overloaded.

- Ensure the Planner Controller is informed of any potential or actual unusual/emergency situations occurrence taking place within the sector's area of responsibility.

Specific duties of the Planner Controller

- Plan and accept aircraft safely into the sector in accordance with prescribed procedures.

- Plan exit conditions according to the Planning Standards or as agreed with the accepting unit/sector.

- Co-ordinate with adjacent units/sectors joining and crossing clearances, estimates, revisions, approval requests and expedite clearances in accordance with prescribed procedures.

- Ensure that co-ordination is effected prior to transferring aircraft.

- Co-ordinate with the Executive Controller the acceptance of any aircraft entering the sector's area of responsibility not complying with navigation or communication requirement (e.g. unserviceable transponder).

- Transfer received radar identity of an aircraft to the Executive Controller.

- Ensure the Executive Controller is aware of any co-ordinated climb or descent made with an adjacent unit/sector.

- Inform Watch Supervisor of unusual/emergency situations within the sector's area of responsibility.

2.2.2 Additional duties specific to Approach control

The previous duties are generic duties common to Terminal and Approach Control.

The following techniques and skills are specific to Approach Control:

Arrivals

(i) Manage inbound aircraft transferred to Approach Control Unit from Terminal Control Unit (Expect aircraft transferred to be in accordance with Terminal Control Unit to Approach Control Unit agreements and at appropriate speeds.)

(ii) Manage inbound aircraft from the release point with Terminal Control Unit to touchdown. (Utilise Standard Arrival Routes [STARs] and approach procedures as appropriate, vector aircraft to final approach, apply appropriate separation, in-trail spacing, streaming, sequencing, and speed control techniques.)

(iii) Manage inbound aircraft established in the inner holding area at the initial approach fix. (Anticipate the need to hold, use holding levels effectively, manage aircraft at holding speeds, establish and co-ordinate the landing interval, calculate and issue Expected Approach Times [EATs] when required.)

(iv) Manage aircraft entering/leaving controlled airspace.

Departures

(i) Manage outbound aircraft from Aerodrome Control to the point where aircraft are transferred to Terminal Control Unit. (Utilise published departure routes [Standard Instrument Departure – SID]) and/or radar to expedite departing aircraft, apply appropriate speed control to departing aircraft, and apply appropriate separation prior to transferring aircraft to Terminal Control Unit.)

(ii) Manage aircraft entering/leaving controlled airspace.

(iii) Issue departure releases.

Flow management

Apply tactical flow management to arriving/departing aircraft when necessary.

2.3 Airspace

The features of a locally used training sector should enable the generation of the type of traffic situation and the type of tasks similar to the ones in Table 1.

Table 1: Airspace

Vertical Limits	FL95 - FL 245 1000 ft SFC - FL 95
Airspace Classification	C
Zones/Areas/Restricted	None
LOAs	See Annex B
Aerodromes	1 aerodrome below the exercise area
Operating Procedures	See Annex B
Adjacent Areas	Airosar TCL above and adjacent, Nolan lower sector in adjacent ACC, Airosar CTR below, Airosar FIR

An example of an airspace complying with these features is to be found in Annex B with all related procedures and Letters of Agreement (LOAs). The definition of the workload is based on the use of this airspace. The area and the procedures are available to any ECAC State wishing to use it as its local sector.

2.4 Performance

A typical simulation, possibly a test simulation located at the end of the module, describes the performance. The assessment procedure will include at least two separate simulations, one for planner, one for executive role. Teamwork should be an essential element in the overall assessment of student performance at all times.

2.4.1 Duration of the typical simulation

The simulations are planned to last for 45–50 minutes including a short briefing. Structured briefing and debriefing will be planned outside the simulations.

2.4.2 Traffic of the typical simulation

The actual numbers of aircraft should relate to the sector hourly capacity and a simulation workload figure of 75% of the theoretical capacity was agreed.

C is the maximum hourly capacity.

T is the duration of the exercise.

M is the number of aircraft per exercise.

$$(C \times 75\%) \times \frac{T}{60} = M$$

For our sector, hourly capacity is 44 aircraft:

$$(44 \times 75\%) \times \frac{45}{60} = 25$$

This is 25 aircraft for 45 min. exercise period.

2.4.3 Workload of the typical simulation

2.4.3.1 General

25 flight plans are activated during the exercise of which 11–12 aircraft are in contact and assumed simultaneously (60% arrivals, 30% departures and 10% transits).

2.4.3.2 Specific

The exercise shall include the following scenarios/problems:

- Departing aircraft; bunched departures with mixed wake turbulence categories and including one fast aircraft following a slower one.
- Arriving aircraft; bunched arrivals with mixed wake turbulence categories and including one fast aircraft following a slower aircraft, one missed approach procedure.
- Holding aircraft; manage and sequence aircraft in/from the holding stack.

- Transit aircraft; one transit aircraft in potential conflict with a departure and one with an arrival.

- One unusual situation limited to a transponder malfunction or diversion.

2.4.3.3 Detailed

An example of such an exercise is described in Annex D by its workload and can be visualised from the CD-ROM attached to this document. The workload description is compliant with the method used in the EUROCONTROL Institute of Air Navigation Services (IANS) course 'Principles of Radar Simulation Design (HUM-SIM)'[3].

2.4.4 Assessment Procedure

The assessment procedure shall provide evidence of consistent and reliable performance on the basis of the performance objectives as laid down in the training plans.

The planner and the executive tasks are equally important for the overall performance. Therefore, both functions shall be assessed independently.

The procedures should include the assessment of the performance of each student during a typical simulation as planner, during a typical simulation as executive and during a simulation including objectives about unusual/ emergency situations and degraded systems capabilities.

[3] http:\\www.ians.lu/programme2003/framesets/courses/framesetind.htm

3. ATM PERFORMANCE OBJECTIVE FOR MODULE 8

3.1 Objective

The general objective stated in the syllabus is:

> *students shall apply operational procedures to ensure a safe, orderly and expeditious service.*

The corresponding performance objective is:

In a radar simulator students shall:

- demonstrate the ability to manage the specified workload demand within the specified Terminal Control (TCL) area of responsibility;
- apply operational radar and planning control techniques and procedures to ensure a safe, orderly and expeditious service to arriving, holding, departing and transiting aircraft.

3.2 Duties of Students

This paragraph describes the duties of students when acting as planner and executive controllers in the TCL Endorsement.

3.2.1 Generic duties

The generic duties are the same as those described in Modules 6 and 7 but applied in a different airspace.

3.2.2 Additional duties specific to Terminal Control

Arrivals

(i) Manage inbound aircraft transferred to the Terminal Control Unit from en-route. (Expect aircraft transferred to be in accordance with en-route to Terminal Control Unit agreements and at appropriate speeds.)

(ii) Manage inbound aircraft from the release point with en-route to the inner holding fixes. (Utilise Standard Arrival Routes [STARs]; apply appropriate radar separation and apply in-trail spacing [streaming] when required; apply speed control techniques.)

(iii) Manage inbound aircraft established in the inner holding area at the initial approach fix. (Anticipate the need to hold; use holding levels effectively; manage aircraft at holding speeds; liaise with Approach

Control and obtain the landing interval; obtain Expected Approach Times [EATs] when required and pass to aircraft and appropriate ATC Agencies.)

(iv) Manage aircraft leaving controlled airspace.

(v) Manage inbound aircraft to an airfield without an Approach Control Unit.

Departures

(i) Manage outbound aircraft from Aerodrome Control (Aerodrome Control/Approach Control) to the point where aircraft are transferred to en-route. (Utilise radar to expedite departing aircraft, utilise published departure routes [Standard Instrument Departure - SID], apply appropriate speed control to departing aircraft, apply appropriate radar separation prior to transferring aircraft to en-route, manage Visual Flight Rules [VFR] traffic and special status/non-standard flights.)

(ii) Manage aircraft joining controlled airspace.

(iii) Manage departing aircraft from an airfield without an Approach Control (APP) unit.

(iv) Issue departure releases.

Flow management

(i) Anticipate the need to hold back arrival aircraft in en-route airspace, stack switching (Terminal Control re-routing).

(ii) Apply tactical flow management to departing aircraft when necessary.

3.3 Terminal Control Module Theory

3.3.1 From Module 6 to Module 8

The objectives are detailed in the syllabus. A summary of the enhancements from Module 6 to Module 8 is:

(i) Knowledge of aircraft navigation and communications equipment that must be carried within the Terminal Area.

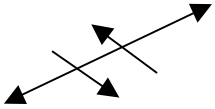
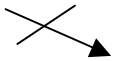
(ii) Knowledge of environmental constraints on TCL operations.

(iii) Knowledge of aircraft performance applicable within TCL airspace.

3.4 Airspace

The features of a locally used training sector should enable the generation of the type of traffic situation and the type of tasks similar to the ones in Table 2.

Table 2: Airspace

Vertical Limits	FL 95 - FL 245 1000 ft - FL 95
Dimensions	60 NM x 50 NM (approx.)
Route Structure	SE-NW  1 way with 1crossing point
	NE-SW  2 way with 2 crossing points
	NW-SE  1 way with 1 crossing point
Airspace Classification	C + F
Zones/Areas/Restricted	None
LOAs	See Annex C
Aerodromes	2 aerodromes below the exercise area
Operating Procedures	See Annex C
Adjacent Areas	1 UAC above, 2 sectors in same ACC, 2 sectors in adjacent ACC, an APP below, an information zone below

An example of an airspace complying with these features is to be found in Annex C with all related procedures and Letters of Agreement (LOAs). The definition of the workload is based on the use of this airspace. The area and the procedures are available to any ECAC State wishing to use it as its local sector.

3.5 Performance

A typical simulation, possibly a test simulation located at the end of the module, describes the performance. The assessment procedure will include at least two separate simulations, one for planner, one for executive role. Teamwork should be an essential element in the overall assessment of student performance at all times.

3.5.1 Duration of the Typical Simulation

The simulations are planned to last for a 45–50 minute duration including short briefing. Structured briefing and debriefing will be planned outside the simulations.

3.5.2 Traffic of the Typical Simulation

The actual numbers of aircraft should relate to the sector hourly capacity and a simulation workload figure of 75% of the theoretical capacity was agreed.

C is the maximum hourly capacity.

T is the duration of the exercise.

M is the number of aircraft per exercise.

$$(C \times 75\%) \times \frac{T}{60} = M$$

For our sector hourly capacity is 80 aircraft:

$$(80 \times 75\%) \times \frac{45}{60} = 45$$

This is 45 aircraft for a 45 min. exercise period.

3.5.3 Workload of the typical simulation

3.5.3.1 General

45 flight plans are activated during the exercise of which 11-12 aircraft are in contact and assumed simultaneously (40% arrivals, 40% departures and 20% transits).

3.5.3.2 Detailed

The detailed workload is described in Annex D. This description is compliant with the method used in the IANS course 'Principles of Radar Simulation Design (HUM-SIM)'[4].

[4] http:\\www.ians.lu/programme2003/framesets/courses/framesetind.htm

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4. TRAINING PLAN FOR MODULE 6

4.1 Time Scale

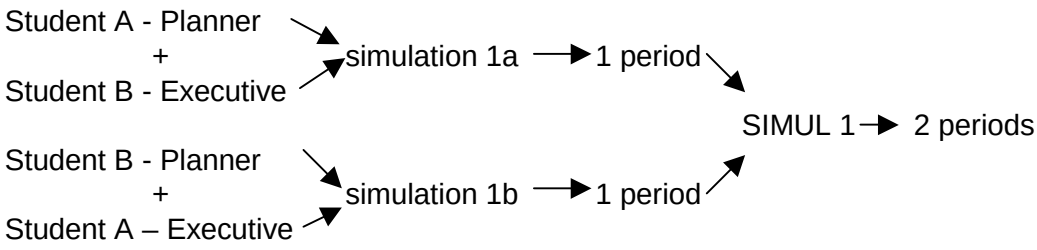
4.1.1 Introduction

This training plan is an example of a possible training for an institute equipped with an adequate radar simulator.

The duration of training event is written in 'periods': to cope with various practices in different training institutes and according to the subject, the period is defined as lasting from 40 to 60 minutes.

Duration of additional training events dedicated to topics such as 'National Legislation and Procedures' is not specified because they will vary according to the location. Duration of other additional training events such as extra Structured Briefing (StBf) is not specified to allow flexibility in regards to student needs.

In order that both students could be Planner controller and Executive controller simulation would be of 'double' construction (either same traffic handled twice or different traffic corresponding to the same objectives handled successively).



Thus simulations are always of a two-period duration. During each of the two periods there are briefing plus practical training plus debriefing, for example 5 min. briefing + 45 min. exercise + 10 min. debriefing = 60 min.

Thus 50 simulations last 100 periods and will be noted as 100 periods in the training plans. Such a definition allows simplicity and consistency: 100 periods mean that the student is actively trained during 100 periods.

A rough invalidated allocation of objectives per training event is available from the TrainDev database at IANS and could be provided on request to training designers.

4.1.2 Example of Timetable

Table 3 summarises the number of periods per subject and the type of training events. The columns detail a subject and the rows indicate the type of training event.

For instance, the planning for the subject Aircraft (ACFT) is: 1 period of Computer-based Practical Exercises (CBPE), 4 periods of Computer-based Training (CWBT), 8 periods of lessons (Les), 13 periods Part-Task Practice (PTP) and 6 periods of Structured Briefing (StBf). This is a total of 32 periods.

During some training events (in particular during simulations) objectives from other subjects are addressed. The training event is nevertheless noted in a unique column to avoid duplication. For instance, the simulations are noted in the columns of ATM, UNIN (Unusual/emergency situations) and DEGS (Degraded systems capability) because these are the most numerous objectives of the simulations even if the simulations include, for example, ACFT objectives.

This example is more detailed in 4.2 and 4.3.

Table 3: Module 6 - APS rating with radar endorsement

			Number of periods per subject											
		TOTAL	INTR	LAW	ATM	MET	NAV	ACFT	HUM	EQPM	PENV	UNIN	DEGS	AGA
Type of training event	Case	14			3				2			7		2
	CBPE	8			3			1				4		
	CWBT	36			16	2	8	4	3		3			
	GrW	0												
	HO	7								7				
	Lab	0												
	Lec	7	3				4							
	Les	77	2	10	12		1	8	16	10		3	6	9
	PTP	60			43			13		4				
	SA	1					1							
	StBf	17		1	10			6						
	ISimul	0												
	TSimul	106			80							16	10	
	GSimul	0												
	Sup Pract	0												
	VC	0												
	Vis	27	2							5	16			4
	Other	5									5			
	TOTAL	365	7	11	167	2	14	32	21	26	24	30	16	15

4.2 Training Requirements: Training Event Coverage

The training event coverage tables indicate how the training events address each particular subject.

These tables list the type, duration, code and title of each training event. The title highlights one of the objectives included in the training event. This view on the training requirements is completed by the training plans. The code indicates the subject, the type of training event, the training and the number of the training event (for instance INTR Les61 for Lesson 1 of Subject INTRODUCTION of Module 6) In case of simulation (ATM Sim6a1), the letter a, i or c indicates **a**pplication, **i**ntegration or **c**onsolidation phase.

EXAMPLE: Introduction

Number of period of the lesson

Type of Training Event	Title (Title Corresponding to one of the Objectives)	Period	Code
Les	Course Management	1	INTR Les61
	Training Ethos and Assessment	1	
Lec	Course Introduction	1	
	Course Introduction	1	INTR Lec62
	Organisation of Simulation	1	INTR Lec63
Vis	Library	1	INTR Vis61
	Simulator	1	INTR Vis62
Other			
Total		7	

Abbreviated Type of Training Event (see Annex A).
List reduced to the Type of Training Event used in the Subject.

Total of periods per Subject

INTR: Introduction (Subject)
Vis: Visit (Training Event)
6: APS (Training)
2: Number

In order to detail the coverage the next level of development, is the production of the training event plans. Training event plans list all the objectives included in each training event.

4.2.1 Introduction

Type of Training Event	Title	Period	Code
Les	Course Management	1	INTR LES61
	Training Ethos and Assessment	1	INTR LES62
Lec	Course Introduction	1	INTR LEC61
	Course Introduction	1	INTR LEC62
	Organisation of Simulation	1	INTR LEC63
Vis	Library	1	INTR VIS61
	Simulator	1	INTR VIS62
Total		7	

4.2.2 Aviation Law

Type of Training Event	Title	Period	Code
Les	Services	1	LAW LES61
	Reports	1	LAW LES62
	Airspace	1	LAW LES63
	General, VFR and IFR Rules	2	LAW LES64
	Pilots Flight Plans	1	LAW LES65
	Holding	1	LAW LES67
	Licence and Rating	1	LAW LES68
	Procedures used following an Incident/Accident	1	LAW LES69
	VFR Holding	1	LAW LES610
StBf	Airspace	1	LAW StBf 61
Total		11	

No training event is allocated to address the objectives on *Local Regulations* because this subject varies according to the location.

4.2.3 Air Traffic Management

Type of Training Event	Title	Period	Code
Case	ATM Communications	2	ATM CAS61
	Need for Phraseology	1	ATM CAS62
CBPE	Flight Information	1	ATM CBPE61
	Area of Responsibility	1	ATM CBPE62
	Alerting Service	1	ATM CBPE63
CWBT	Limits of Responsibility	5	ATM CBT61
	Traffic Information	1	ATM CBT62
	Radar Information	3	ATM CBT63
	Radar Separation	1	ATM CBT64
	Longitudinal Separation (Radar Environment)	1	ATM CBT65
	Radar Identification (PSR)	2	ATM CBT66
	Radar Identification (SSR)	2	ATM CBT67
	Holding Patterns	1	ATM CBT68
Les	Division of Responsibility	1	ATM LES61
	Messages and Signals	1	ATM LES62
	Interactions with Supervisor	1	ATM LES63
	Principles of Airspace Management	1	ATM LES64
	Organisation of Traffic Flows	1	ATM LES65
	Radar Coverage	1	ATM LES66
	Capacity	1	ATM LES67
	Communications	1	ATM LES68
	Mode S	1	ATM LES69
	Operational Environment	1	ATM LES610
	Radar Control	1	ATM LES611
	Radar Identity	1	ATM LES612
PTP	Area of Responsibility	5	ATM PTP61
	Traffic Information	2	ATM PTP62
	Radar Information	3	ATM PTP63
	Airspace Management	3	ATM PTP64

Type of Training Event	Title	Period	Code
	Flow Management	1	ATM PTP65
	Level Allocation	2	ATM PTP66
	Tools for Co-ordination	1	ATM PTP67
	Radar Separation and Vectoring	5	ATM PTP68
	Vertical Separation	5	ATM PTP69
	Longitudinal Separation	3	ATM PTP610
	Delegation of Separation	1	ATM PTP611
	Use of Data Display	4	ATM PTP612
	Holding Patterns	3	ATM PTP613
	Radar Identity	5	ATM PTP614
StBf	Abnormal Situations	1	ATM StBf60
	Demand and Capacity	1	ATM StBf61
	Co-ordination (analysis)	1	ATM StBf62
	Co-ordination (application)	1	ATM StBf63
	Wake Turbulence	1	ATM StBf64
	Operational Environment	1	ATM StBf65
	Holding Patterns	1	ATM StBf66
	Sequencing for Landing	3	ATM StBf67
TSimul	ATM General simulation	0	ATM SIM6
	Altimetry	2	ATM SIM6a1
	Terrain Clearance	2	ATM SIM6a2
	Radar Vectoring – Transit	2	ATM SIM6a3
	Radar Vectoring for Approach	2	ATM SIM6a4
	Radar Vectoring – Departures vs Transits	2	ATM SIM6a5
	Radar Vectoring - Arrivals vs Transits	2	ATM SIM6a6
	Primary and Secondary Radar Identification	2	ATM SIM6a7
	Re-Identification	2	ATM SIM6a8
	Alerting Service	2	ATM SIM6i1
	Special Planner Practice 1	2	ATM SIM6i2
	Special Planner Practice 2	2	ATM SIM6i3
	Special Planner Practice 3	2	ATM SIM6i4

Type of Training Event	Title	Period	Code
	Aircraft Continuing Visually	2	ATM SIM6i5
	VMC Climb/Descent	2	ATM SIM6i6
	Holding Level Allocation	2	ATM SIM6i7
	Vertical Separation in the Holding Pattern	2	ATM SIM6i8
	Vertical Separation – Holding vs Transit	2	ATM SIM6i9
	Separation – Holding vs Departing	2	ATM SIM6i10
	Holding on intermediate	2	ATM SIM6i11
	Holding on Final	2	ATM SIM6i12
	Holding Following a Missed Approach	2	ATM SIM6i13
	Landing Sequence	2	ATM SIM6i14
	Vectoring to Holding Pattern	2	ATM SIM6i15
	Vertical after Radar Separation	2	ATM SIM6i16
	Vertical Transit to Separate from Holding	2	ATM SIM6i17
	Vectoring Aircraft Leaving the Holding Pattern	2	ATM SIM6i18
	Reidentifying Aircraft Leaving Holding	2	ATM SIM6i19
	Transfer of Radar Identification (Special Planner)	2	ATM SIM6i20
	Tactical Flow Management	2	ATM SIM6c1
	FUA	2	ATM SIM6c2
	Phraseology for Unusual Events	2	ATM SIM6c3
	Increased Radar Separation	2	ATM SIM6c4
	Reduced Radar Separation	2	ATM SIM6c5
	Emergency Radar Separation	2	ATM SIM6c6
	Radar Separation – Speed Control	2	ATM SIM6c7
	Radar Vectoring – Meteorological Phenomena	2	ATM SIM6c8
	Increased Vertical Separation – Severe Turbulence	2	ATM SIM6c9
	Emergency Vertical Separation 1	2	ATM SIM6c10
	Emergency Vertical Separation 2	2	ATM SIM6c11
	Non Radar Procedures	2	ATM SIM6c12
Total		167	

The simulations are organised in three phases: Application, Integration and Consolidation:

Application phase

Consists of applying control skills separately during global simulation.

Integration phase

Consists of integrating all required skills in traffic situations demanding multitasking.

Consolidation phase

Consists of consolidating the level acquired during the integration phase, while achieving the ATM performance objectives.

The phase during which the simulation occurs is indicated by its initial in the code of the simulation (sim6a1 for simulation 1 of the Application phase of Module 6).

Duration of other additional training events such as extra StBf including demonstration of simulation exercises is not specified to allow flexibility for student needs.

4.2.4 Meteorology

Type of Training Event	Title	Period	Code
CWBT	Air Pressure	2	MET CBT61
Total		2	

4.2.5 Navigation

Type of Training Event	Title	Period	Code
CWBT	Navigation Assistance	8	NAV CBT61
Les	Applied Navigation	1	NAV LES61
Lec	Information on Future Navigation techniques	4	NAV LEC61
SA	Maps and Charts	1	NAV SA61
Total		14	

NAV CBT61 may include activity such as flight simulation.

4.2.6 Aircraft Performance

Type of Training Event	Title	Period	Code
CBPE	Cockpit Instruments	1	ACFT CBP61
CWBT	Aircraft Performance	4	ACFT CBT61
Les	Cockpit Instruments	1	ACFT LES61
	Wake Turbulence Categories	1	ACFT LES62
	ICAO Aircraft Categories	2	ACFT LES63
	Final Approach and Landing	1	ACFT LES64
	Climb Techniques	1	ACFT LES65
	Direct Routing	1	ACFT LES66
	Antenna Shadowing and Additional Equipment	1	ACFT LES67
PTP	Integration of Performances	2	ACFT PTP61
	Integration of Pilot Information	2	ACFT PTP62
	Planning	1	ACFT PTP63
	Climb	2	ACFT PTP64
	Descent and Initial Approach	2	ACFT PTP65
	Final Approach and Landing	2	ACFT PTP66
	Economic Factors	2	ACFT PTP67
StBf	Descent and Initial Approach	1	ACFT StBf61
	Economic Factors	1	ACFT StBf62
	Climb	1	ACFT StBf63
	Operational Requirements	1	ACFT StBf64
	Ecological Factors	2	ACFT StBf65
Total		32	

4.2.7 Human Factors

Type of Training Event	Title	Period	Code
CASE	SAFER Case	2	HUM CAS61
CWBT	SAFER	3	HUM CBT61
Les	Decision-making	1	HUM LES61
	Fatigue	1	HUM LES62
	Personal Fitness	1	HUM LES63
	Social and Organisational Factors	1	HUM LES64
	Team Relations	1	HUM LES65
	Reports	2	HUM LES66
	Verbal and Non-verbal Communication	2	HUM LES67
	Stress	1	HUM LES68
	Helplessness	1	HUM LES69
	Minimising Stress	1	HUM LES610
	Effects of Shocking Events	1	HUM LES611
	Procedures after Incidents/Accidents	2	HUM LES612
	Efficiency	1	HUM LES613
Total		21	

4.2.8 Equipment and Systems

Type of Training Event	Title	Period	Code
Les	Operational Position	1	EQPM LES61
	Professional Knowledge	2	EQPM LES62
	Radio Range	1	EQPM LES63
	Two-way Communications	1	EQPM LES64
	Code Management	1	EQPM LES65
	Future Developments	1	EQPM LES66
	AFTN	2	EQPM LES67
	Systems Limits	1	EQPM LES68
PTP	Direction Finder	2	EQPM PTP61
	Data Transfer	1	EQPM PTP62
	Radar Equipment	1	EQPM PTP63
Vis	EQPM Sup Practice Visit 01	2	EQPM VIS61
	EQPM Sup Practice Visit 02	3	EQPM VIS62
HO	Simulator	3	EQPM HO61
	Radio Equipment	2	EQPM HO62
	Direction Finding	1	EQPM HO63
	Communications and Radars	1	EQPM HO64
Total		26	

4.2.9 Professional Environment

Type of Training Event	Title	Period	Code
CWBT	Introduction to ATM	3	PENV CBT61
Vis	Visit to an Upper Centre	4	PENV VIS6UC
	Visit to an Adjacent Approach	4	PENV VIS6AP
	Visit to an Air Defence Centre	4	PENV VIS6DE
	Visit to an Airport Tower	4	PENV VIS6TW
Other	Flight Simulations	5	PENV FSIM61
Total		24	

No training event is allocated to address the objective “when available, students shall participate in programmes to enhance their knowledge and understanding of ATC” because the achievement of this objective will depend on location, time and opportunity.

4.2.10 Unusual/Emergency Situations

Type of Training Event	Title	Period	Code
CASE	Aircraft Problems	4	UNIN CAS61
	Hijack	3	UNIN CAS62
CBPE	Transponder Failure	1	UNIN CBPE61
	Radio Failure	2	UNIN CBPE62
	Diversion	1	UNIN CBPE63
Les	Traffic Information	2	UNIN LES61
	Vectoring out of Controlled Airspace	1	UNIN LES62
TSimul	Aircraft Problems Series 1	2	UNIN SIM61
	Aircraft Problems Series 2	2	UNIN SIM62
	Aircraft Problems Series 3	2	UNIN SIM63
	Traffic Information	2	UNIN SIM64
	Vectoring Out of Controlled Airspace	2	UNIN SIM65
	Transponder Failure	2	UNIN SIM66
	Radio Failure	2	UNIN SIM67
	Diversion	2	UNIN SIM68
Total		30	

4.2.11 Degraded Systems Capability

Type of Training Event	Title	Duration	Code
Les	Ground Equipment	1	DEG LES61
	Equipment Degradation	1	DEG LES62
	Data Transmission	1	DEG LES63
	Surveillance Equipment	1	DEG LES64
	System Degradation	1	DEG LES65
	Navigation Equipment Failure	1	DEG LES66
TSimul	Use of Standby/Backup Ground/Air Equipment	2	DEG SIM61
	Use of Standby/Backup Ground/Ground Equipment	2	DEG SIM62
	Surveillance Equipment Degradation	2	DEG SIM63
	Processing System Degradation	2	DEG SIM64
	NAVAIDS Degradation	2	DEG SIM65
Total		16	

4.2.12 Aerodrome

Type of Training Event	Title	Period	Code
CASE	Aerodrome Conditions	1	AGA CAS61
CBPE	Movement Area Conditions	1	AGA CAS62
Les	Aerodrome	2	AGA LES61
	Movement Area	1	AGA LES62
	Manoeuvring Area	1	AGA LES63
	Runways	3	AGA LES64
	Obstacles	2	AGA LES65
Vis	Visit to an Airport	4	AGA VISAD
Total		15	

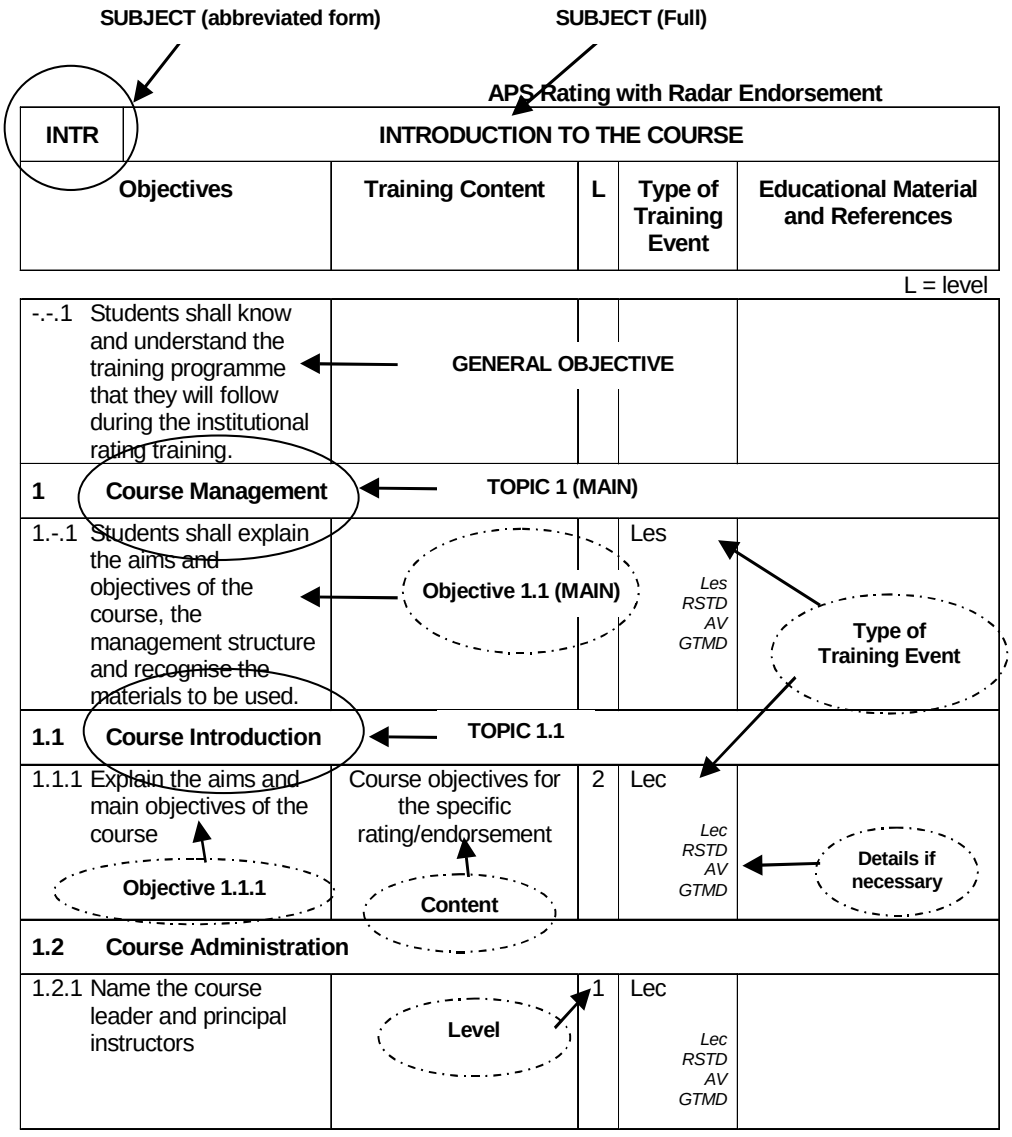
4.3 Training Requirements: Training Plan Tables

The training plans indicate for each subject, topic and objective which set of training methods and media are the most efficient.

The purpose of the training plan table is to present in a clear and concise manner all the information needed to develop the courseware and to implement the training.

The training plan table is divided into five columns that include the data related to the objectives.

EXAMPLE:



Specific case of ATM objectives

All ATM objectives are either a prerequisite or a part of a simulation.

When a specific objective is expected to constitute the emphasis of an exercise, this objective is explicitly stated in the content of the exercise. The title of the simulation is created from one of these specific objectives.

When a specific objective is included in an exercise but is not the emphasis of a particular exercise, this objective is explicitly stated in the content of the so-called "general simulation". These objectives apply during all exercises.

Additional detailed features

The topics are only an indication to index the objectives: the objectives below the row are related to the topic of the row.

There is no direct relation between the topics and the training events because only objectives are linked to training events.

There are no additional data related to topics in the training plans because the topics are not directly associated with a training event.

Training events do not relate to topics but to the objectives associated to the topic.

In order to specify the type of training event, every objective is linked to at least one type of training event except when the “parent” objective (General or Main) is linked to a training event and that this is considered sufficient to cover the ‘child’ objective.

APS Rating with Radar Endorsement

INTR	INTRODUCTION TO THE COURSE			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

Students shall know and understand the training programme that they will follow during the institutional rating training.				
1 Course Management				
Students shall explain the aims and objectives of the course and the management structure, and shall recognise the materials to be used.				
1.1 Course Introduction				
1.1.1 Explain the aims and main objectives of the course	Course objectives for the specific rating/endorsement	2	Lec	
1.2 Course Administration				
1.2.1 Name the course leader and principal instructors		1	Lec	
1.3 Study Material and Training Documentation				
1.3.1 Choose appropriate documentation for course studies	Library; CBT library	3	Lec Vis (G)	
1.3.2 Integrate appropriate documentation into the course	Library; CBT library	4	HO Sup Pract Vis (G)	
2 Introduction to the ATC Training Course				
Students shall state the methodology and describe the assessment procedures used in the course.				
2.1 Course Content				
2.1.1 State the different methods of teaching the subjects	Theoretical training; Practical training; Self-study; Taxonomy; Action verbs	1	Lec	

INTR	INTRODUCTION TO THE COURSE			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

2.1.2 Describe, in general terms, the content of the subjects		2	Lec	
2.1.3 Describe the organisation of theoretical training		2	Lec	
2.1.4 Describe the organisation of simulation training	Structure of participation; Simulation exercises; Briefing; Debriefing	2	Lec	
2.2 Training Ethos				
2.2.1 Recognise the feedback mechanisms available	Instructor discussions; Training progress; Assessment; Results; Briefing; Debriefing	1	Les	
2.2.2 Describe the positive effect in working together with fellow course participants	How the influence of interactive studies can lead to success	2	Les	
2.3 The Assessment Process				
2.3.1 Describe the assessment procedure	The assessment process applied during the course and associated re-sit procedures	2	Les	

APS Rating with Radar Endorsement

LAW	AVIATION LAW			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

Students shall: i. appreciate the principles of aviation law; ii. know, understand and apply the Rules of the Air and the Regulations, including airspace and flight planning; iii. appreciate the authority vested in the controller and the means by which that authority is exercised.				
1 Rules and Regulations				
Students shall explain and apply the Rules and Regulations which affect ATC operations.				
1.1 General				
1.1.1 Differentiate between the Air Navigation Services	ICAO Doc 9161 - ATM (ATS, ATFM, ASM)	2	Les	
1.1.2 Explain the considerations which determine the need for the Air Traffic Services	ICAO Annex 11, Chapter 2	2	Les	
1.1.3 Differentiate between the Air Traffic Services	ATC service; Advisory service; Flight information service; Alerting service	2	Les	
1.2 Reports				
1.2.1 State the standard forms for reports	e.g. Incident/Accident; Airmiss/Airprox; Breach of regulations; Watch/Log book; Records	1	Les	
1.2.2 Describe the functions of, and processes for, reporting	e.g. Incident/Accident; Airmiss/Airprox; Breach of Regulations; Watch/Log book; Records	2	Les	
1.2.3 Use the standard forms for reporting	ICAO Doc 4444, Appendix 4; Breach of regulations; Other	3	Les	

LAW	AVIATION LAW			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

1.2.4 Explain the use of air traffic incident/accident report form	ICAO Doc 4444, Part 2 and Appendix 4	2	Les	
1.2.5 Use the ICAO air traffic incident/accident report form	ICAO Doc 4444, Appendix 4	3	Les	
1.2.6 Use the national air traffic incident/accident report form		3	Les	
1.3 Airspace				
1.3.1 Appreciate types of airspace and their relevance to APS/RAD control	Classes A-G as appropriate; National classifications	3	Les	
1.3.2 Provide planning, co-ordination and control actions appropriate to the airspace classification	ICAO Annex 11; National requirements (AIP); International requirements; Civil requirements; Military requirements; Areas of responsibility; Sectorisation; Airspace structure Link to ATM 1.4.2 NOTE: The simulated environment must be related the specific rating and take account of the local airspace classification requirements	4	Les TSimul (Hi Fi Sim)	
1.3.3 Appreciate the structure of airspace and its relevance to the ACS/RAD rating	ICAO Annex 11; National requirements (AIP); International requirements; Civil requirements; Military requirements; Areas of responsibility; Sectorisation; Airspace structure	2	Les	

LAW	AVIATION LAW			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

1.3.4 Provide planning, co-ordination and control actions appropriate to the airspace structure	ICAO Annex 2, ICAO Annex 11; National requirements (AIP); International requirements; Civil requirements; Military requirements; Areas of responsibility; Sectorisation; Airspace structure NOTE: The simulated environment must be related to the specific rating and take account of the local airspace structure requirements	4	Les TSimul (Hi Fi Sim) StBf	
1.4 Rules of the Air				
1.4.1 Provide planning, co-ordination and control actions appropriate to the General Rules	ICAO Annex 2, ICAO Annex 11, Chapter 3 NOTE: The simulated environment must be related to the specific rating and take account of the appropriate rules	4	Les TSimul (Hi Fi Sim)	
1.4.2 Provide planning, co-ordination and control actions appropriate to the VFR, IFR, and meteorological flying conditions	ICAO Annex 11, Chapters 4 and 5 NOTE: The simulated environment must be related to the specific rating and take account of the appropriate rules	4	Les TSimul (Hi Fi Sim)	
1.4.3 Provide planning, co-ordination and control actions appropriate to the rules for minimum safe height and terrain clearance	Responsibility for terrain clearance; Terrain clearance dimensions; Minimum safe altitudes; Transition level; Minimum flight level	4	Les TSimul (Hi Fi Sim)	

LAW	AVIATION LAW			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

1.5 Flight Plans				
1.5.1 Obtain flight plan information in order to provide air traffic services	Types of FPL (RPL, AFIL, etc.); Supplementary information	3	TSimul (Hi Fi Sim)	
1.5.2 Use flight plan information in order to provide air traffic services	Types of FPL (RPL, AFIL, etc.); Supplementary information	3	TSimul (Hi Fi Sim)	
1.5.3 Appreciate the pilot's responsibilities in relation to adherence to flight plan	Inadvertent changes; Intended changes; Position reporting	3	Les	
1.6 National Legislation and Procedures				
1.6.1 Describe the methods by which National Regulations are implemented in the ACS/RAD rating		2	Les	
1.7 Special National Legislation and Procedures				
1.7.1 Provide planning, co-ordination and control actions in accordance with special national legislation and procedures	e.g. Security; Environmental (noise abatement, conservation areas, fuel jettisoning); Sensitive areas (hospitals, VIP residences); Priority allocation; Special purpose codes	4	Les TSimul (Hi Fi Sim)	
2 Holding				
Students shall appreciate holding patterns and procedures.				
2.1 Holding IFR				
2.1.1 Describe types of holding patterns	Published; Non-published; Extended Link to ATM 10	2	Les	

LAW	AVIATION LAW			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

2.1.2 Describe an ICAO holding pattern	ICAO Doc 8168 – Parts of an IFR holding pattern; Entry/exit procedures; Dimensions of patterns; Protected airspace; Holding areas; Alignment; Rates of turns; Holding times; Expect further clearance; Expected Approach Times (EATs) Link to ATM 10	2	Les	
2.1.3 Describe the use and purpose of holding	Effect of speed; Effect of level used; Effect of navigation aid in use Link to ATM 10	2	Les	
2.2 Holding VFR				
2.2.1 Describe the purpose and principles of VFR holding		2	Les	
3 ATC Licensing				
Students shall appreciate the legal aspects associated with the ATC Licence (European Manual of Personnel Licensing - Air Traffic Controllers [EATMP, 2000] – L1).				
3.1 Privileges and Conditions				
3.1.1 Describe the conditions which must be met for the issue and maintenance of the APS/RAD rating	European Manual of Personnel Licensing - Air Traffic Controllers (EATMP, 2000 – L1)	2	Les	
3.1.2 Describe the privileges associated with the APS/S/R rating		2	Les	

LAW	AVIATION LAW			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

3.2 Incident / Accident				
3.2.1 Explain the procedures used following an incident/accident	National regulations Link to Human Factors 5	2	Les	

APS Rating with Radar Endorsement

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

Students shall apply operational procedures to ensure a safe, orderly and expeditious service.				
1 Air Traffic Services and Airspace Management				
Students shall provide the appropriate service.				
1.1 Air Traffic Control Services				
1.1.1 Provide the appropriate Air Traffic Control Services (ATCS)	ICAO Annex 2; ICAO Doc 7030; ICAO Annex 11; ICAO Doc 4444; National docs; Operation manuals	4	TSimul (Hi Fi Sim)	
1.1.2 Appreciate own area of responsibility APS/RAD	NOTE: The simulated environment must be related to the specific rating	2	Les CWBT PTP	
1.2 Flight Information Service				
1.2.1 Explain the responsibility for the provision of a flight information service	ICAO Doc 4444, Part 2, Para 4	2	CBPE	
1.2.2 Relay appropriate information concerning the location of other conflicting traffic	Traffic information; Essential traffic information	3	CBPE CWBT PTP	
1.2.3 Provide flight information service	ICAO Doc 4444	4	TSimul (Hi Fi Sim)	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

1.2.4 Use radar for the provision of flight information service	ICAO Doc 4444; Information to identified aircraft concerning: traffic; weather; navigation	3	CWBT TSimul (Hi Fi Sim) PTP	
1.3 Alerting Service				
1.3.1 Explain the responsibility for the provision of an alerting service	ICAO Annex 11	2	CBPE	
1.3.2 Provide appropriate action in abnormal situations	ICAO Doc 4444; Special codes; Seek assistance (TRM); Checklist; National legislation/ requirements; Overdue action; Emergency action; Uncertainty; Alert; Distress	4	StBf	
1.3.3 Respond to distress and urgency messages and signals		3	Les	
1.3.4 Apply national requirements in abnormal situations	Priority allocation; Special purpose codes	3	TSimul (Hi Fi Sim)	
1.3.5 Co-ordinate with RCC		4	StBf	
1.3.6 Provide appropriate action in abnormal situations using radar derived information		4	TSimul (Hi Fi Sim)	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

1.4 Air Traffic Flow Management (ATFM)				
1.4.1 Apply principles of air traffic flow management	Working principles of ATFM; Flexible use of airspace; Free flight	3	PTP	
1.4.2 Organise traffic flows and patterns to take account of airspace boundaries	Civil and military; Controlled; Uncontrolled; Advisory; Restricted; Danger; Prohibited; Special rules; Sector boundaries; National boundaries; FIR boundaries; Delegated airspace; Transfer of control; Transfer of communications; En-route; Off-route Link to Aviation Law 1.3.	4	CBPE Les TSimul (Hi Fi Sim) PTP	
1.4.3 Organise traffic flows and patterns to take account of radar coverage		4	Les TSimul (Hi Fi Sim)	
1.4.4 Organise traffic flows and patterns to take account of areas of responsibility		4	CBPE Les TSimul (Hi Fi Sim) PTP	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**
				L = level
1.4.5 Balance demand against capacity	Capacity of adjacent sectors; Capacity of own sector; Evaluation of personal traffic load; Evaluation of other sources of predicted traffic load	5	Les TSimul (Hi Fi Sim) StBf	
1.4.6 Inform supervisor of situation	e.g. Abnormal situations; Decrease in sector capacity; Limitations on systems and equipment; Changes in workload/capacity; Relevant information (e.g. reported ground-based incidents, forest fire, smoke, oil pollution); Unusual meteorological conditions	3	Les Tsimul (Hi Fi Sim)	
1.4.7 Apply flow management procedures		3	TSimul (Hi Fi Sim)	
1.5 Airspace Management (ASM)				
1.5.1 Appreciate the working principles of airspace management	FUA	3	Les TSimul (Hi Fi Sim)	
1.5.2 Organise traffic to take account of airspace management	Conditional routes	4	PTP	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

2 Communication				
Students shall appreciate the necessity for effective communication and use approved phraseology.				
2.1 Effective Communication				
2.1.1 Analyse examples of pilot and controller communication for effectiveness		4	Les Case	
2.1.2 Explain the need for approved phraseology	ICAO Doc 4444, Part 10; ICAO Doc 9432; Standard words and phrases as contained in ICAO Annex 10, Chapter 5	2	Case	
2.1.3 Use ICAO approved phraseology	ICAO Doc 4444, Part 10; ICAO Doc 9432; Standard words and phrases as contained in ICAO Annex 10, Chapter 5	3	TSimul (Hi Fi Sim)	
2.1.4 Use national approved phraseology when applicable		3		
2.1.5 Perform communication effectively	Transmission techniques	3	TSimul (Hi Fi Sim)	
2.2 Phraseology for Unusual Events				
2.2.1 Analyse examples of pilot and controller communication for effectiveness		4	Les Case	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

2.2.2 Interpret the rules to provide an effective service where approved phraseology is not available	Receiver (RX) only; Transmitter (TX) only; Speechless aircraft; Incomplete messages	5	Case TSimul (Hi Fi Sim)	
2.3 Mode S Data Transfer				
2.3.1 Appreciate the use of Mode S	Data which can be exchanged; Limitations; Advantages; Disadvantages	3	Les	
3 ATC Clearances and Instructions				
Students shall issue appropriate clearances and instructions.				
3.1 ATC Clearances				
3.1.1 Provide appropriate ATC clearances	e.g. Climb; Joining; En-route	4	TSimul (Hi Fi Sim) PTP	
3.2 ATC Instructions				
3.2.1 Provide appropriate ATC instructions	e.g. SSR Code; Other	3	TSimul (Hi Fi Sim) PTP	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

4 Co-ordination				
Students shall understand the need for, and conduct co-ordination.				
4.1 Necessity				
4.1.1 Identify the need for co-ordination		3	StBf	
4.2 Tools and Methods				
4.2.1 Use the available tools for co-ordination methods	e.g. Electronic transfer of flight data; Telephone; Interphone; Intercom; Direct speech; Radiotelephone; Local agreements	3	TSimul (Hi Fi Sim) PTP	
4.3 Co-ordination Procedures				
4.3.1 Initiate appropriate co-ordination	Delegation/transfer of responsibility for air/ground communications and separation; Release point; Transfer of control	3	TSimul (Hi Fi Sim) PTP	
4.3.2 Analyse effect of co-ordination requested by an adjacent operational position	Delegation/transfer of responsibility for air/ground communications and separation; Release point; Transfer of control	4	TSimul (Hi Fi Sim) StBf	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

4.3.3 Select, after negotiation, an appropriate course of action	Including the cases: When additional traffic cannot be accepted by adjacent control position; When additional traffic cannot be accepted by own control position	5	TSimul (Hi Fi Sim) StBf	
4.3.4 Ensure the agreed course of action is carried out		4	TSimul (Hi Fi Sim) StBf	
5 Altimetry and Level Allocation				
Students shall allocate appropriate levels to aircraft.				
5.1 Altimetry				
5.1.1 Calculate appropriate levels	e.g. TRL; TA; Transition layer; Height; Flight level; Altitude; Vertical distance to airspace boundaries	3	PTP	
5.1.2 Allocate levels (height, altitude, flight level) according to altimetry data	ICAO Doc 8168	4	TSimul (Hi Fi Sim) PTP	
5.1.3 Ensure separations according to Altimetry data	ICAO Doc 4444, Part 3	4	TSimul (Hi Fi Sim) PTP	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

5.2 Terrain Clearance				
5.2.1 Integrate safe vertical distance from terrain into control actions	e.g. Lowest available flight level; Minimum safe altitude; Minimum sector altitude	4	TSimul (Hi Fi Sim) PTP	
5.2.2 Ensure safe vertical distance from terrain	e.g. Radar vectoring area; Lowest available flight level; Minimum safe altitude	4	TSimul (Hi Fi Sim) PTP	
6 Separation Standards				
Students shall select and maintain appropriate separation between aircraft.				
6.1 Radar Separation				
6.1.1 Describe how radar separation is applied	On an analogue radar display; On a synthetic radar display; Between primary radar blips; Between secondary radar responses; Primary vs secondary Radar Position Symbols (RPS)	2	CWBT	
6.1.2 Provide radar separation	ICAO Doc 4444; ICAO Doc 7030; Standard; Increased; Reduced; Emergency separations; Speed control	4	TSimul (Hi Fi Sim) PTP	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

6.1.3 Provide radar separation by practising radar vectoring in a variety of situations	Transit; Meteorological phenomena; Vectoring for approach; Departure vs transit vs arrival	4	TSimul (Hi Fi Sim) PTP	
6.2 Vertical separation				
6.2.1 Provide standard vertical separation	ICAO Doc 4444; ICAO Doc 7030; Level allocation; During climb/descent; Rate of climb/descent	4	TSimul (Hi Fi Sim) PTP	
6.2.2 Provide increased vertical separation	ICAO Doc 4444; ICAO Doc 7030; Level allocation; During climb/descent; Rate of climb/descent	4	TSimul (Hi Fi Sim) PTP	
6.2.3 Provide reduced vertical separation	ICAO Doc 4444; ICAO Doc 7030; Level allocation; During climb/descent; Rate of climb/descent	4	PTP	
6.2.4 Provide emergency vertical separation	ICAO Doc 4444; ICAO Doc 7030; Level allocation; During climb/descent; Rate of climb/descent	4	TSimul (Hi Fi Sim) PTP	
6.2.5 Provide vertical separation in a radar environment	Into/out of radar cover; Radar failure; Mode-C derived information	4	TSimul (Hi Fi Sim) PTP	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

6.3 Horizontal Separation				
6.3.1 Provide longitudinal separation in a radar environment	Within radar coverage; Speed control; Mach number speed control	4	CWBT TSimul (Hi Fi Sim) PTP	
6.4 Delegation of Separation				
6.4.1 Delegate separation in the case of aircraft continuing visually		4	TSimul (Hi Fi Sim) PTP	
6.4.2 Delegate separation to pilots in the case of VMC climb/descent		4	TSimul (Hi Fi Sim) PTP	
6.5 Wake Turbulence Separation				
6.5.1 Provide wake turbulence separation		4	TSimul (Hi Fi Sim) StBf	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

7 Data Display				
Students shall analyse data in order to manage air traffic.				
7.1 Data Management				
7.1.1 Update the data display to accurately reflect the traffic situation	Information displayed; Strip-marking procedures; Electronic information data displays; Actions based on traffic display information; Calculation of EETs	4	TSimul (Hi Fi Sim) PTP	
7.1.2 Analyse pertinent data on data displays		4	Les TSimul (Hi Fi Sim)	
7.1.3 Organise pertinent data on data displays		4	TSimul (Hi Fi Sim) PTP	
8 Operational Environment				
Students shall recognise and maintain the integrity of the simulated operational environment.				
8.1 Integrity of the Operational Environment				
8.1.1 Obtain information concerning the operational environment	e.g. Briefing; Takeover; Notices; Local orders; Verify information	3	Les TSimul (Hi Fi Sim) StBf	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**
				L = level
8.1.2 Check and maintain the integrity of the operational environment	e.g. Frequency; VOLMET; ATIS; SIGMET; Systems set-up; Radar display	3	Les TSimul (Hi Fi Sim) StBf	
8.1.3 Inform the relieving controller of the operational environment	e.g. Briefing; Takeover; Notices; Local orders; Verify information	3	Les TSimul (Hi Fi Sim) StBf	
8.2 Verification of the Currency of Operational Procedures				
8.2.1 Check all relevant documentation before managing traffic	e.g. Briefing; LOAs; NOTAM; AICs	3	Les TSimul (Hi Fi Sim) StBf	
8.2.2 Apply procedural changes while managing traffic		3	TSimul (Hi Fi Sim) StBf	

ATM	AIR TRAFFIC MANAGEMENT

Objectives	Training Content	L	Type of Training Event	Educational Material and References

L = level

9 Provision of Control Service				
Students shall provide an appropriate control service, applicable to the specific rating.				
9.1 General				
9.1.1 Describe the division of responsibility between air traffic control units	ICAO Doc 4444; National requirements	2	Les CWBT	
9.1.2 Describe the responsibility in regard to military traffic	ICAO Doc 4444; National requirements	2	Les CWBT	
9.1.3 Obtain operational information	ICAO Doc 4444; Local operational manuals	3	TSimul (Hi Fi Sim) StBf	
9.1.4 Interpret operational information		5	TSimul (Hi Fi Sim)	
9.1.5 Organise forwarding of operational information		4	TSimul (Hi Fi Sim)	
9.1.6 Integrate operational information into control decisions		4	TSimul (Hi Fi Sim)	
9.2 Approach Control				
9.2.1 Explain the responsibility for the provision of an APS radar control service	ICAO Doc 4444; Local operational manuals	2	Les	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

9.2.2 Explain the functions that can be performed with the use of radar derived information in an APS/radar control service	Holding; Approach procedures; Missed approach procedures; Sequencing; Arriving; Departing traffic; Transit traffic; EATs	2	Les	
10 Holding				
Students shall manage holding traffic.				
10.1 Holding				
10.1.1 Use holding patterns	ICAO Doc 4444; Separation from holding patterns Link to Aviation Law 2	3	StBf PTP	
10.1.2 Issue holding instructions		3	TSimul (Hi Fi Sim)	
10.1.3 Consider the effect of: wind, aircraft, speed, rate of turn, height, aircraft type, aircraft performance		2	CWBT	
10.1.4 Allocate holding levels		4	TSimul (Hi Fi Sim)	
10.1.5 Provide vertical separation between aircraft in a holding pattern		4	TSimul (Hi Fi Sim)	
10.1.6 Provide vertical separation between aircraft in a holding pattern and transiting aircraft		4	TSimul (Hi Fi Sim)	

ATM	AIR TRAFFIC MANAGEMENT				
Objectives		**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

10.1.7	Provide separation between aircraft in a holding pattern and departing traffic		4	TSimul (Hi Fi Sim)	
10.1.8	Calculate Expected Approach Times (EATs)		3	TSimul (Hi Fi Sim)	
10.1.9	Update Expected Approach Times (EATs)		3	TSimul (Hi Fi Sim)	
10.1.10	Manage holding traffic on intermediate approach procedures		4	TSimul (Hi Fi Sim)	
10.1.11	Manage holding traffic on final approach procedures		4	TSimul (Hi Fi Sim)	
10.1.12	Provide holding levels for traffic returning to the holding pattern following a missed approach		4	TSimul (Hi Fi Sim)	
10.1.13	Organise the traffic landing sequence in a holding pattern	Change of sequence due to: Company preference; Aircraft performance; Aircraft approach capability; ILS categories	4	TSimul (Hi Fi Sim) StBf	
10.2	**Holding in a Radar Environment**				
10.2.1	Provide vectors to aircraft entering a holding pattern		4	TSimul (Hi Fi Sim)	
10.2.2	Ensure vertical separation exists before radar separation is lost		4	TSimul (Hi Fi Sim)	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

10.2.3 Provide vectors to transiting aircraft to ensure radar separation from a holding area		4	TSimul (Hi Fi Sim)	
10.2.4 Provide vectors to aircraft leaving a holding pattern		4	TSimul (Hi Fi Sim)	
10.2.5 Ensure re-identification of aircraft leaving a holding pattern		4	TSimul (Hi Fi Sim)	
10.2.6 Maintain vertical separation until radar separation is established		3	TSimul (Hi Fi Sim)	
11 Radar Identification				
Students shall: i. establish and maintain radar identification; ii. respond to a loss of radar identification.				
11.1 Establishment of Radar Identification				
11.1.1 Apply the methods of establishing radar identification using primary radar	ICAO Doc 4444	3	Les CWBT TSimul (Hi Fi Sim) PTP	
11.1.2 Appreciate the precautions when establishing radar identification using primary radar		3	Les	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

11.1.3 Apply methods of establishing radar identification using secondary radar		3	Les CWBT TSimul (Hi Fi Sim)	
11.1.4 Appreciate the precautions when establishing radar identification using secondary radar		3	Les	
11.1.5 Apply procedures in the case of misidentification		3	Les TSimul (Hi Fi Sim)	
11.2 Maintenance of Radar Identification				
11.2.1 Appreciate the necessity to maintain radar identification at all times		3	Les TSimul (Hi Fi Sim)	
11.3 Loss of Radar Identity				
11.3.1 Appreciate when an aircraft identification is lost or in doubt	e.g. Out of radar coverage; Loss of radar service; Weather clutter; Other clutter; Garbling	3	PTP	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

11.3.2 Apply methods to re-establish radar identification		3	TSimul (Hi Fi Sim) PTP	
11.3.3 Respond to loss/doubt concerning radar identification	Non-radar procedures	3	TSimul (Hi Fi Sim) PTP	
11.4 Position Information				
11.4.1 Appreciate the circumstances when radar position information should be passed to the aircraft		3	TSimul (Hi Fi Sim) PTP	
11.5 Transfer of Identity				
11.5.1 Appreciate the precautions when transferring radar identification		3	Les PTP	
11.5.2 Apply the methods of transfer of radar identification		3	Les TSimul (Hi Fi Sim) PTP	

APS Rating with Radar Endorsement

MET	METEOROLOGY			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

Students shall acquire, decode and make proper use of meteorological information relevant to the provision of ATS to approach traffic.				
1 Atmospheric Processes				
Student shall calculate and integrate the minimum flight levels into their decision-making process.				
1.1 Air Pressure				
1.1.1 Calculate the minimum applicable altitude/flight level being given appropriate meteorological data	Transition altitude; Transition level; Minimum flight level; Transition layer Linked to ATM 5	3	CWBT	Meteorology
2 Meteorological Phenomena				
Students shall analyse and take account of meteorological phenomena in his control actions.				
2.1 Planning and Co-ordination				
2.1.1 Analyse data about meteorological phenomena	Wind; Clouds; Precipitation; Pressure settings; Thunderstorms; Icing; Jetstreams; Clear Air Turbulence (CAT); Turbulence; Microburst; Marked mountain waves; Lines squalls; Solar radiation	3	TSimul	
2.1.2 Integrate data into planning and co-ordination		4	TSimul	

MET	METEOROLOGY			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

2.2 Weather Avoidance				
2.2.1 Use radar vectoring techniques to avoid adverse weather when necessary/possible		3	TSimul	
2.2.2 Use radar vectoring techniques to avoid areas of radar clutter		3	TSimul	
2.3 Clearances and Instructions				
2.3.1 Analyse data about meteorological phenomena	Wind; Clouds; Precipitation; Pressure settings; Thunderstorms; Icing; Jetstreams; Clear Air Turbulence (CAT); Turbulence; Microburst; Marked mountain waves; Line squalls; Solar radiation	4	TSimul	
2.3.2 Integrate data into clearances and instructions		4	TSimul	
2.4 Information				
2.4.1 Obtain meteorological information	Wind; Clouds; Precipitation; Pressure settings; Thunderstorms; Icing; Jetstreams; Clear Air Turbulence (CAT); Turbulence; Microburst; Marked mountain waves; Line squalls; Solar radiation	3	TSimul	
2.4.2 Relay meteorological information	To: Aircraft; Meteorological office; Flight information service	3	TSimul	

MET	METEOROLOGY			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

2.4.3 Decode meteorological information		3	TSimul	
2.4.4 Analyse data about meteorological phenomena		4	TSimul	
2.4.5 Integrate data into transmitted information		4	TSimul	

APS Rating with Radar Endorsement

NAV	NAVIGATION			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

Students shall analyse all navigational aspects in order to organise the traffic.				
1 Applied Navigation				
Students shall appreciate the information on maps and charts and integrate this into control decisions.				
1.1 Maps and Charts				
1.1.1 Use maps and charts for planning and co-ordination purposes		3	SA Les	
1.2 Pilot Interpreted Ground-based System				
1.2.1 Estimate the behaviour of aircraft according to the operational status of navigational ground-based systems	Limitations of navigation aids; Status	3	CWBT	
1.3 On-board Systems				
1.3.1 Estimate the behaviour of aircraft according to the operational status of navigational ground-based systems	Limitations of on-board navigational systems	3	CWBT	
1.4 Satellite-based Systems				
1.4.1 Estimate the behaviour of aircraft according to the operational status of navigational satellite-based systems	GPS; GLONASS; GNSS	3	CWBT	

NAV	NAVIGATION			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

1.5 Future Developments				
1.5.1 Be informed about existing projects and developments which will impact on the work in the future	e.g. Briefing; Seminars; Courses; Workshops; Technical journals; Aviation journals	0	Lec	
1.6 Navigation Assistance				
1.6.1 Evaluate the necessary information to be provided to pilots in need of navigation assistance	Nearest most suitable aerodrome; Track; Heading; Distance; Aerodrome Information; Any other navigation assistance relevant at the time	5	CWBT	
1.6.2 Assist aircraft observed to be deviating from its known intended route		3	CWBT	

APS Rating with Radar Endorsement

ACFT	AIRCRAFT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

Students shall assess aircraft performance to integrate it into traffic organisation.				
1 Aircraft Instruments				
Students shall understand the relevance of the cockpit information presented to the pilot.				
1.1 Cockpit Instruments				
1.1.1 Integrate the information provided by the pilot into the traffic situation	Flight instruments; Engine instruments; Navigational instruments; NDB (ADF); VOR (TACAN); DME; ILS; MLS; Additional instruments; TCAS; SSR transponder; Head up display; GPWS; Wind shear indicator; Weather radar; FMS; EFIS	2	CBPE Les PTP	
2 Aircraft Types and Categories				
Students shall characterise wake turbulence and ICAO approach categories.				
2.1 Wake Turbulence Categories				
2.1.1 Characterise each wake turbulence category and explain how to prevent their effect on other aircraft		2	Les	
2.2 ICAO Approach Categories				
2.2.1 Characterise each ICAO approach category and explain why procedures are established accordingly		2	Les	

ACFT	AIRCRAFT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

2.3 Planning				
2.3.1 Consider ICAO approach aircraft categories for planning purposes	Categories A, B, C, D, E	2	Les	
3 Factors Affecting Aircraft Performance				
Students shall integrate aircraft performance factors in the provision of approach control.				
3.1 Climb				
3.1.1 Integrate the effect of factors affecting aircraft during climb into the analysis of traffic situations		4	StBf Les PTP	
3.2 Descent and Initial Approach				
3.2.1 Integrate the effect of factors affecting aircraft during descent and initial approach into the analysis of traffic situations		4	StBf PTP	
3.3 Final Approach and Landing				
3.3.1 Estimate the influence of factors affecting aircraft during final approach and descent	Aircraft configuration; Weight; Meteorological conditions; Runway conditions	3	Les	
3.3.2 Integrate the influence of factors affecting aircraft during final approach and descent in the management of the traffic		4	Les	

ACFT	AIRCRAFT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

3.4 Economic Factors				
3.4.1 Integrate consideration of economic factors into control actions	Routing; Flight level; Speed; Rates of climb or descent	4	StBf PTP	
3.4.2 Use continuous climb techniques where applicable		3	Les	
3.4.3 Use direct routing where applicable		3	Les	
3.5 Ecological Factors				
3.5.1 Integrate ecological restrictions into traffic planning and control actions	Fuel jettisoning; Noise abatement procedures; Minimum flight levels	4	StBf	
3.6 Miscellaneous Factors				
3.6.1 Integrate operational requirements into planning	e.g. Military flying; Calibration flights; Aerial photography	4	StBf	
3.6.2 Explain the affect of antenna shadowing on RTF communication		2	Les	
3.6.3 Explain the affect of antenna shadowing on SSR operation		2	Les	
3.6.4 Integrate factors affecting aircraft performances into planning	Message relays regarding performance	4	Les	
3.6.5 Explain the operation of aircraft additional equipment	e.g. Radios (number of); Emergency radio; SELCAL	2	Les	
3.6.6 Explain the operation of aircraft additional equipment	Transponders; Mode A; Mode C; Mode S	2	Les	

ACFT	AIRCRAFT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

4 Aircraft Data				
Students shall: i. use the standard average performance data for the provision of approach control; ii. recognise potential or actual emergency situations; iii. apply standard solutions in the case of simple situations.				
4.1 Performance Data				
4.1.1 Integrate the known aircraft performance data into control action decisions		4	CWBT PTP	

APS Rating with Radar Endorsement

HUM	HUMAN FACTORS			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

Students shall: i. recognise the necessity to constantly extend their knowledge; ii. analyse factors which affect personal and team performance.				
1 Psychological Factors				
Students shall relate psychological factors to the decision-making process.				
1.1 Cognitive				
1.1.1 Describe the factors which influence decision-making	e.g. Stress; Learning; Knowledge; Fatigue; Alcohol/drugs; Distraction; Interpersonal relations; TRM	2	Les	
1.1.2 Relate human factors to decision-making		4	Les	
2 Medical and Physiological Factors				
Students shall respond to fatigue and lack of personal fitness in the performance of their duties.				
2.1 Fatigue				
2.1.1 Describe the onset of fatigue	e.g. Lack of concentration; Listlessness; Irritability; Frustration	2	Les	
2.1.2 Recognise the onset of fatigue in self		1	Les	
2.1.3 Recognise the onset of fatigue in others		1	Les	
2.1.4 Respond to indications of fatigue in an appropriate manner		3	Les	
2.2 Fitness				
2.2.1 Recognise signs of lack of personal fitness		1	Les	

HUM	HUMAN FACTORS			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

2.2.2 Describe actions when aware of a lack of personal fitness		2	Les	
3 Social and Organisational Factors				
Students shall develop teamwork attitudes.				
3.1 Human Relations				
3.1.1 Apply social and organisational factors to work with other team members		3	Les	
3.2 Team Resource Management (TRM)				
3.2.1 State the objectives of Team Resource Management	Suggested reference: 'Guidelines for Developing and Implementing Team Resource Management' (EATCHIP, 1996 – HF2)	1	Les	
3.3 Group Dynamics				
3.3.1 Identify the professional relationships between members of the group		3	Les	
3.3.2 Identify the reasons for conflict		3	Les	
3.3.3 Describe actions to prevent repetitions of conflicts		2	Les	
3.3.4 Take account of Team Resource Management Programmes		2	Les	

HUM	HUMAN FACTORS			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

3.3.5 Respond to the application of Team Resources Management Techniques	e.g. Role of members; Allocation of responsibilities within the team; Benefits of having other team members to rely on; Safety aspects; Assistance in abnormal situations	3	Les	
4 Communication				
Students shall: i. accurately complete written reports; ii. express themselves clearly so as to be understood by other team members and colleagues.				
4.1 Written Work				
4.1.1 Record information by writing effectively	e.g. Strips; Reports; Log-books	3	Les	
4.1.2 Pass information by writing effectively		3	Les	
4.2 Verbal/Non-verbal Communication				
4.2.1 Recognise Human Communication Theory	e.g. Different languages; Air traffic language	1	Les	
4.2.2 Characterise the factors which affect verbal communication	e.g. Speed of speech; Frequency; Volume; Background noise	2	Les	
4.2.3 Characterise non-verbal communication	e.g. Body language; Facial expressions	2	Les	
4.2.4 Use language effectively in the practice of air traffic control		3	Les	

HUM	HUMAN FACTORS			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

5 Stress				
Students shall integrate stress management procedures in the performance of their duties.				
5.1 Stress				
5.1.1 Recognise the effects of stress	Stress and its symptoms in self and in others	1	Les	
5.2 Helplessness				
5.2.1 Respond to feelings of helplessness	Normal/abnormal situations	3	Les	
5.3 Stress Management				
5.3.1 Act to relieve or minimise stress in self and/or others	The effect of personality in coping with stress; The benefits of active stress management	3	Les	
5.3.2 Obtain assistance in stressful situations	TRM; CISM; The benefits of offering and accepting help in stress situations	3	Les	
5.3.3 Recognise the effect of shocking and stressful events	Self and others; Abnormal situations; CISM; TRM	1	Les	
5.3.4 Consider the benefits of Critical Incident Stress Management (CISM)	CISM	2	Les	
5.3.5 Explain the procedures used following an incident/accident	CISM; National/local procedures and/or regulations; Counselling; Human element (link to Aviation Law for legislative aspects)	2	Les	

HUM	HUMAN FACTORS			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

6 Human Error				
The student shall be able to discuss the concept of human error.				
6.1 Human Error				
6.1.1 Explain the relationship between error and safety	Number and combination of errors; Pro-active versus reactive approach to discovery of error	2	CWBT Case	SAFER (EATMP, 2001c – T27)
6.1.2 State the different types of error	Slips; Lapses; Mistakes; Violations	1	CWBT	
6.1.3 Differentiate between errors and violations		2	CWBT	
6.1.4 Describe error-prone conditions		2	CWBT Case	SAFER (EATMP, 2001c – T27)
7 Working Methods				
Students shall discuss the effect of human factors considerations on efficiency.				
7.1 Efficiency				
7.1.1 Consider, from a human factors point of view, the factors effecting efficiency in the provision of air traffic control	Own and others workload; OJT; Customer requirements; Economy; Ecology; Safety	2	Les	

HUM	HUMAN FACTORS			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

8 Working Knowledge				
Students shall explain the importance of maintaining and updating professional knowledge for controllers.				
8.1 Controller Knowledge				
8.1.1 Maintain and update professional knowledge to retain competence in the operational environment	e.g. Briefing; LOAs; NOTAM; AICs; Reports of accident/incident; VOLMET; ATIS; SIGMET	3	Les	

APS Rating with Radar Endorsement

EQPM	EQUIPMENT AND SYSTEMS			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

Students shall: i. demonstrate knowledge and understanding of the basic working principles of equipment that is in general use in ATC; ii. select and operate the appropriate equipment in order to provide a safe and efficient ATC service in a simulated environment.				
1 General				
Students shall be familiar with typical equipment to be found in a control environment.				
1.1 ATC Equipment				
1.1.1 Maintain the technical integrity of the operational position	Notification procedures; Responsibilities	3	Les	
1.1.2 Operate the various items of equipment in the simulator	Electronic displays; Flight progress board (strip display); Meaning of colours	3	Vis (G)	
1.1.3 Operate all available equipment in abnormal situations		3	Vis (G)	
1.2 Controller Knowledge				
1.2.1 Explain the importance of maintaining professional knowledge concerning new equipment		2	Les	
1.2.2 List the available means to maintain professional knowledge	e.g. Briefing; Seminars; Courses; Workshops; Technical journals; Aviation journals; Familiarisation flight	1	Les	

EQPM	EQUIPMENT AND SYSTEMS

Objectives	Training Content	L	Type of Training Event	Educational Material and References

L = level

2 Radio				
Students shall correctly operate the radio and direction finding equipment.				
2.1 Radio Theory				
2.1.1 Consider radio range	Transfer to another frequency; Apparent radio failure; Failure to get radio contact	3	Les	
2.2 Radio Communications				
2.2.1 Operate two-way communication	Equipment; procedures; Frequency selection; All available equipment in abnormal situations	3	Les Vis (G)	
2.2.2 Check for indications of correct operation of radio equipment	Indicator lights; Serviceability displays; Selector/frequency displays	3	Vis (G)	
2.2.3 Check for faulty operation of radio equipment	Indicator lights; Serviceability displays; Selector/frequency displays	3	Vis (G)	
2.2.4 Initiate corrective action when faulty operation is detected	In accordance with local instructions and procedures	3	Vis (G)	
2.3 Direction Finding				
2.3.1 Measure and decode direction finding information	e.g. ADF/UDF/VDF	3	Vis (G)	

EQPM	EQUIPMENT AND SYSTEMS			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

2.3.2 Use direction finding information to assist in managing a safe orderly and expeditious flow of traffic	ADF/UDF/VDF	3	PTP	
3 Other Voice Communications				
Students shall operate the communication equipment.				
3.1 ATC Communications				
3.1.1 Use telephone, interphone and intercom	In accordance with local instructions and procedures	2	Vis (G)	
4 Radar				
Students shall use the radar equipment.				
4.1 Use of Radars				
4.1.1 Operate radar equipment	Switch on and adjust settings in accordance with local instructions	3	Vis (G)	
4.1.2 Operate appropriate anti-clutter devices	In accordance with local instructions; Weather clutter; Permanent echoes; Unwanted targets	3	Vis (G)	
4.1.3 Analyse the information provided by the radar equipment	Including: Use; Advantages; Limitations	4	PTP	
4.2 Secondary Radar				
4.2.1 Explain code management	Normal codes; Special codes; International; National; Local	3	Les	

EQPM	EQUIPMENT AND SYSTEMS			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

4.2.2 Allocate codes		4	Les TSimul	
5 Future Equipment				
Students shall be aware of known future developments.				
5.1 New Developments				
5.1.1 Be aware of future developments	Voice recognition; Mode S	1	Les	
6 Automation in ATS				
Students shall extract appropriate information from automated data.				
6.1 Aeronautical Fixed Telecommunications Network				
6.1.1 Identify and decode the information disseminated through aeronautical fixed telecommunications network (AFTN)	Aircraft movement messages; NOTAM; SNOWTAM; BIRDTAM	3	Les	
6.2 On-Line Data Interchange (OLDI)				
6.2.1 Operate electronic data transfer equipment		3	PTP Vis (G)	
7 Operational Positions				
Students shall identify, interpret and operate the equipment.				
7.1 General				
7.1.1 Use equipment in an APP operational position		3	Vis (G)	

EQPM	EQUIPMENT AND SYSTEMS			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

7.2 Information Systems				
7.2.1 Check availability of information material		3	TSimul	
7.3 Flight Data Systems				
7.3.1 Integrate the flight data displays at operational positions	Working principles; Duties; Equipment in use	4	Vis (G)	
8 Systems Limitations				
Students shall understand the significance of system limitations.				
8.1 System and Equipment Limitations				
8.1.1 Take account of the limitations of systems and equipment		2	Les	

APS Rating with Radar Endorsement

PENV	PROFESSIONAL ENVIRONMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

Students shall appreciate the need for close co-operation with other agencies.				
1 Study Visits and Customer Relations				
When available, students shall participate in programmes to enhance their knowledge and understanding of ATC.				
1.1 Flight Familiarisation and/or Flight Simulator				
1.1.1 Enhance knowledge of the ATC users operation by participating in familiarisation flights and flight simulator programmes		3	ISimul	
1.2 Other Units				
1.2.1 Characterise other civil and military facilities	Study visits to: e.g. TWR; APP; ACC; AIS; RCC; Air defence units	2	Vis (G)	
1.3 Customer Relations				
1.3.1 Appreciate the role of ATC as a service provider		3	CWBT	
1.3.2 Appreciate the requirements of the users	e.g. Civil and military operators; Business users; Recreational aviation operators; Airport authorities	3	CWBT	

APS Rating with Radar Endorsement

UNIN	UNUSUAL/EMERGENCY SITUATIONS			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

Students shall manage air traffic in unusual situations.				
1 Unusual/Emergency Situations				
1.1 Aircraft Problems				
1.1.1 List of aircraft failures	e.g. Engine failure; Hydraulic failure; Fire on board; Lack of fuel; Bird strike; Transponder failure; Decompression; ACFT lost/unsure of position	1	Case (G)	
1.1.2 Apply the recommended ATC procedures for given unusual situations		3	Case (G) TSimul	
1.2 Unknown Traffic				
1.2.1 Apply the procedures in the case of unknown traffic	Inside controlled airspace; Outside controlled airspace; IFR/VFR	3	Les TSimul	
1.3 Radar Vectoring Outside Controlled Airspace				
1.3.1 Explain the circumstances which may require aircraft to be vectored out of controlled airspace	Weather avoidance; Emergency; Traffic avoidance	2	Les	
1.3.2 Apply procedures regarding vectoring out of controlled airspace	e.g. Co-ordination; Information to aircraft	3	TSimul	

UNIN	UNUSUAL/EMERGENCY SITUATIONS			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

1.4 Transponder Failure				
1.4.1 Apply procedures in the event of a SSR transponder failure	e.g. Total; Partial; National regulations; ICAO Doc 4444; ICAO Doc 7030	3	CBPE TSimul	
1.5 Radio Failure				
1.5.1 Apply procedures when a controller experiences complete or partial failure of ground radio communication equipment		3	CBPE TSimul	
1.5.2 Explain the procedures followed by a pilot when he experiences complete or partial radio failure	e.g. Civil; Military; Special national procedures	2	CBPE	
1.5.3 Apply ATC procedures associated with a pilot experiencing complete or partial radio failure	e.g. Civil; Military; Special national procedures	3	CBPE TSimul	
1.6 Diversions				
1.6.1 Provide flight information to diverting aircraft	e.g. Nearest most suitable aerodrome; Aerodrome information	4	CBPE TSimul	
1.6.2 Provide flight information to other aircraft	e.g. Concerning an emergency descent	4	CBPE TSimul	

UNIN	UNUSUAL/EMERGENCY SITUATIONS			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

1.6.3 Perform appropriate co-ordination	e.g. Other sectors and units	3	CBPE TSimul	
1.6.4 Provide navigation assistance to diverting aircraft	Track/heading; Distance; Other navigation assistance	4	CBPE TSimul	
1.6.5 Provide radar vectoring to diverting aircraft	Track/heading; Distance	4	CBPE TSimul	
1.7 Hijack				
1.7.1 Apply ATC procedures associated with hijack	National; International	3	Case (G)	

APS Rating with Radar Endorsement

DEGS	DEGRADED SYSTEMS CAPABILITY			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**
Students shall integrate system degradation procedures in the management of air traffic.				
1 Communication Equipment				
Students shall ensure the transfer of data by alternative methods.				
1.1 Ground/Air Radio Equipment				
1.1.1 Recognise that ground radio equipment has degraded	e.g. VHF; UHF; HF	1	Les	
1.1.2 Provide information to aircraft by using standby/backup equipment		4	TSimul (Hi Fi Sim)	
1.2 Ground/Ground Equipment				
1.2.1 Recognise that equipment has degraded	e.g. Telephone; Interphone; Intercom	1	Les	
1.2.2 Provide information to adjacent sectors by using standby/backup equipment		4	TSimul (Hi Fi Sim)	
1.3 Data Link Equipment				
1.3.1 Recognise that data link equipment has degraded	e.g. Mode S; Automatic data transfer; Automatic co-ordination	1	Les	
1.3.2 Use alternative methods of transferring data between ground and aircraft	e.g. Ground/air radio	3	Les TSimul (Hi Fi Sim)	

L = level

DEGS	DEGRADED SYSTEMS CAPABILITY			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

1.3.3 Use alternative methods of transferring data between units/work stations	e.g. Telephone; Direct pointing; Intercom	3	Les TSimul (Hi Fi Sim)	
2 Surveillance Equipment				
Students shall respond to degradation of surveillance equipment.				
2.1 Partial or Total Degradation				
2.1.1 Recognise that surveillance equipment has degraded	Partial power failure; Loss of certain facilities; Total failure	1	Les	
2.1.2 Integrate remedial procedures and/or techniques	e.g. Inform adjacent sectors; Inform aircraft; Apply vertical separation (emergency, increased); Increased radar separation; Reduce the number of aircraft entering area of responsibility; Transfer aircraft to another unit	4	Les TSimul (Hi Fi Sim)	
3 Processing Systems				
Students shall respond to degradation in the processing systems associated with the surveillance equipment.				
3.1 ATC Processing System Degradation				
3.1.1 Recognise a system degradation	e.g. FDPS; RDPS; Software processing of surveillance display	1	Les	

DEGS	DEGRADED SYSTEMS CAPABILITY			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

3.1.2 Integrate appropriate procedure following a processing system degradation	e.g. National procedures; Local unit procedure	4	Les TSimul (Hi Fi Sim)	
4 Navigation Equipment				
Students shall respond to the degradation of non-surveillance navigation equipment.				
4.1 Navigation Aid Degradation				
4.1.1 Recognise when a navigation equipment failure will effect operational ability	e.g. VOR; Approach aids	1	Les	
4.1.2 Integrate appropriate procedures in the event of a navigation equipment failure	e.g. Vertical separation (standard emergency); Other non-radar separation (geographical, visual); Inform aircraft; Seek assistance from adjacent units	4	Les TSimul (Hi Fi Sim)	

APS Rating with Radar Endorsement

AGA	AERODROMES			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

Students shall recognise and understand the design and layout of aerodromes.				
1 General				
1.1 Standards and Recommended Practices				
1.1.1 Explain the difference between standards and recommended practices	ICAO Annex 14	2	Les	
1.2 Definitions				
1.2.1 Describe the general layout of an aerodrome	ICAO Annex 14	2	Les Vis (G)	
1.2.2 Define the component parts of an aerodrome	ICAO Annex 14; e.g. Aerodrome elevation; Reference point; Apron; Movement area; Manoeuvring area	1	Les	
1.3 Co-ordination				
1.3.1 Identify the information that has to be passed between Air Traffic Services and the Airport Authority	Airport conditions; Fire/rescue category; Condition of ground equipment and navigation aids; AIRAC; ICAO Annex 14	3	Les Case (G)	

AGA	AERODROMES			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

2 Movement Area				
2.1 Movement Area				
2.1.1 Describe Movement Area	ICAO Annex 14	2	Les Vis (G)	
2.1.2 Explain the marking of obstacles and unusable or unserviceable areas	Flags; Signs on pavement; Lights	2	Les	
2.1.3 Identify the conditions of the movement area that have to be passed to aircraft		3	Case (G)	
2.2 Manoeuvring Area				
2.2.1 Describe manoeuvring area	ICAO Annex 14	2	Les Vis (G)	
2.2.2 Describe taxiway		2	Les Vis (G)	
2.2.3 Describe the daylight marking on taxiways		2	Les Vis (G)	
2.2.4 Describe taxiway lighting		2	Les Vis (G)	
2.3 Runways				
2.3.1 Describe runway	Runway; Runway surface; Runway strip; Shoulder; Runway end safety areas; Clearways; Stopways	2	Les Vis (G)	

AGA	AERODROMES			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

2.3.2 Describe instrument runway	ICAO Annex 14	2	Les Vis (G)	
2.3.3 Describe non-instrument runway	ICAO Annex 14	2	Les Vis (G)	
2.3.4 Explain declared distances	TORA; TODA; ASDA; LDA	2	Les	
2.3.5 Explain the differences between ACN and PCN	Strength of pavements	2	Les	
2.3.6 Explain the numbering system and orientation of runways	Deka degrees; Left; Centre; Right	2	Les	
2.3.7 Describe the daylight markings on runways	e.g. Colour; Designation; Centreline; Threshold; Aiming point; Fixed distance; Touchdown zone; Side strip	2	Les Vis (G)	
2.3.8 Describe runway lights	e.g. Colour; Centreline; Intensity; Edge; Touchdown zone; Threshold; Barettes	2	Les Vis (G)	
2.3.9 Explain the functions of visual landing aids	e.g. AVASI; VASI; PAPI	2	Les	
2.3.10 Describe the approach lighting systems	Centre line; Cross bars; Stroboscopic; Colours; Intensity and brightness	2	Les Vis (G)	
2.3.11 Characterise the effect of water/ice on runways	Damp; Wet; Water patches; Flooding; Snow; Slush; Ice	2	Les	
2.3.12 Describe braking action		2	Les	
2.3.13 Explain the runway visual range		2	Les	

AGA	AERODROMES			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

3 Obstacles				
3.1 General				
3.1.1 Explain the standards and recommendations for obstacle restrictions	Obstacle limitation surface; Obstacle limitation requirements; Objects outside the obstacle limitation surfaces; Other obstacles	2	Les	
3.2 Obstacle Limitation Surfaces				
3.2.1 Explain obstacle clearance surfaces	Outer horizontal; Conical; Inner approach; Transitional; Inner transitional; Balked landing; Take off climb	2	Les	

5. TRAINING PLAN FOR MODULE 8

5.1 Time Scale

Table 4 is the Module 8 timetable.

This timetable is only to be understood as an **addition** to Module 6. Module 8 is not a stand-alone module. In fact, only Module 6 + Module 8 (or Module 7 + Module 8) is meaningful. If necessary refer to 4.1.1 and 4.1.2 when reading Table 4.

Table 4: Module 8 - TCL endorsement (8/6)

			Number of periods per subject											
		TOTAL	INTR	LAW	ATM	MET	NAV	ACFT	HUM	EQPM	PENV	UNIN	DEGS	AGA
Type of training event	Case	0												
	CBPE	0												
	CWBT	0												
	GrW	0												
	HO	0												
	Lab	0												
	Lec	0												
	Les	2	1										1	
	PTP	0												
	SA	0												
	StBf	16		1	12			3						
	ISimul	0												
	TSimul	60			50								10	
	GSimul	0												
	Sup Pract	0												
	VC	0												
	Vis	0												
	Other	0												
	TOTAL	78	1	1	62	0	0	3	0	0	0	0	11	0

Table 5: Modules 6 + 8 - APS rating with radar and TCL endorsement

			Number of periods per subject											
		TOTAL	INTR	LAW	ATM	MET	NAV	ACFT	HUM	EQPM	PENV	UNIN	DEGS	AGA
Type of training event	CASE	14			3				2			7		2
	CBPE	8			3			1				4		
	CWBT	36			16	2	8	4	3		3			
	GRW	0												
	HO	7								7				
	Lab	0												
	Lec	7	3				4							
	Les	79	3	10	12		1	8	16	10		3	7	9
	PTP	60			43			13		4				
	SA	1					1							
	StBf	33		2	22			9						
	ISimul	0												
	TSimul	166			130							16	20	
	GSimul	0												
	Sup Pract	0												
	Vis	27	2							5	16			4
	Other	5									5			
	TOTAL	443	8	12	229	2	14	35	21	26	24	30	27	15

5.2 Training Requirements: Training Event Coverage

5.2.1 Introduction

Type of Training Event	Title	Period	Code
Les	Course Introduction	1	INTR LEC81
Total		1	

5.2.2 Aviation Law

Type of Training Event	Title	Period	Code
StBf	Specific Features of TCL	1	LAW StBf81
Total		1	

5.2.3 Air Traffic Management

Type of Training Event	Title	Period	Code
StBf	StBf for ATM	12	
TSimul	ATM Simuls	50	
Total		62	

5.2.4 Meteorology

No additional dedicated training event planned after Module 6.

5.2.5 Navigation

No additional dedicated training event planned after Module 6. Some objectives are addressed during ATM training events.

5.2.6 Aircraft

Type of Training Event	Title	Period	Code
StBf	Climb	1	ACFT StBf 81
	Descent	1	ACFT StBf 82
	Economic and Ecological Factors	1	ACFT StBf 83
Total		3	

5.2.7 Human Factors

No additional dedicated training event planned after Module 6.

5.2.8 Equipment and Systems

No additional dedicated training event planned after Module 6.

5.2.9 Professional Environment

No additional dedicated training event planned after Module 6.

5.2.10 Unusual/Emergency Situations

No additional dedicated training event planned after Module 6.

5.2.11 Degraded Systems Capability

Type of Training Event	Title	Period	Code
Les	Degraded Situations	1	DEG LES81
TSimul	Degraded Situations 1-5	10	
Total		11	

System degradations have different consequences for Approach, TMA and En-Route airspace. Therefore five simulations (ten periods) are considered necessary to enhance the objectives included in this module.

5.2.12 Aerodromes

No additional dedicated training event planned after Module 6.

5.3 Training Requirements: Training Plan Tables

The Training Plan tables indicate for each subject, topic and objective which set of training methods and media are the most efficient. For more details see 4.3.

In this particular case, a lot of objectives are not linked to any training event. This is due to the fact that the objective has been achieved in Module 6 and that duplication of training on this objective is not considered as necessary.

Nevertheless, these objectives are also of relevance for the qualification to be achieved in this module.

Terminal Area Control Endorsement (8/6)

INTR	INTRODUCTION TO THE COURSE			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

Students shall know and understand the training programme that they will follow during the institutional rating training.				
1 Course Management				
Students shall explain the aims and objectives of the course, the management structure and recognise the materials to be used.				
1.1 Course Introduction				
1.1.1 Explain the aims and main objectives of the course	Course objectives for the specific rating/endorsement	2	Les	
1.2 Course Administration				
1.2.1 Name the course leader and principal instructors		1	Les	
1.3 Study Material and Training Documentation				
1.3.1 Choose appropriate documentation for course studies	Library; CBT library	3		
1.3.2 Integrate appropriate documentation into the course	Library; CBT library	4	Les	
2 Introduction to the ATC Training Course				
Students shall state the methodology and describe the assessment procedures used in the course.				
2.1 Course Content				
2.1.1 State the different methods of teaching the subjects	Theoretical training; Practical training; Self-study; Taxonomy; Action verbs	1		

INTR	INTRODUCTION TO THE COURSE			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

2.1.2 Describe, in general terms, the content of the subjects		2	Les	
2.1.3 Describe the organisation of theoretical training		2		
2.1.4 Describe the organisation of simulation training	Structure of participation; Simulation exercises; Briefing; Debriefing	2		
2.2 Training Ethos				
2.2.1 Recognise the feedback mechanisms available	Instructor discussions; Training progress; Assessment; results; Briefing; Debriefing	1		
2.2.2 Describe the positive effect in working together with fellow course participants	How the influence of interactive studies can lead to success	2		
2.3 The Assessment Process				
2.3.1 Describe the assessment procedure	The assessment process applied during the course and associated re-sit procedures	2	Les	

Terminal Area Control Endorsement (8/6)

LAW	AVIATION LAW			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

Students shall: i. appreciate the principles of aviation law; ii. know, understand and apply the Rules of the Air and the Regulations, including airspace and flight planning; iii. appreciate the authority vested in the controller and the means by which that authority is exercised.				
1 Rules and Regulations				
Students shall explain and apply the rules and regulation which affect ATC operations.				
1.1 General				
1.1.1 Differentiate between the air navigation services	ICAO Doc 9161- ATM (ATS, ATFM, ASM)	2		
1.1.2 Explain the considerations which determine the need for the air traffic services	ICAO Annex 11, Chapter 2	2		
1.1.3 Differentiate between the Air Traffic Services	ATC service; advisory service; Flight information service; alerting service	2		
1.2 Reports				
1.2.1 State the standard forms for reports	e.g. Incident/Accident; Airmiss/Airprox; Breach of regulations; Watch/Log book; Records	1		
1.2.2 Describe the functions of, and processes for, reporting	e.g. Incident/Accident; Airmiss/Airprox; Breach of regulations; Watch/Log book; Records	2		
1.2.3 Use the standard forms for reporting	ICAO Doc 4444, Appendix 4	3		

LAW	AVIATION LAW			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

1.2.4 Explain the use of air traffic incident/accident report form	ICAO Doc 4444, Part 2 and Appendix 4	2		
1.2.5 Use the ICAO air traffic incident/accident report form	ICAO Doc 4444	3		
1.2.6 Use the national air traffic incident/accident report form		3		
1.3 Airspace				
1.3.1 Appreciate types of airspace and their relevance to APS/RAD/TC or ACS/RAD/TC control	Classes A - G as appropriate; National classifications	3	StBf	
1.3.2 Provide planning, co-ordination and control actions appropriate to the airspace classification	ICAO Annex 11; National requirements (AIP); International requirements; Civil requirements; Military requirements; Areas of responsibility; Sectorisation; Airspace structure Link to ATM 1.4.2. NOTE: The simulated environment must be related to the specific rating and take account of the local airspace classification requirements	4	StBf TSimul (Hi Fi Sim)	

LAW	AVIATION LAW			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

1.3.3 Appreciate the structure of airspace and its relevance to the APS/RAD/TC or ACS/RAD/TC endorsement	ICAO Annex 11; National requirements (AIP); International requirements; Civil requirements; Military requirements; Areas of responsibility; Sectorisation; Airspace structure	3	StBf	
1.3.4 Provide planning, co-ordination and control actions appropriate to the airspace structure	ICAO Annex 2; ICAO Annex 11; National requirements (AIP); International requirements; Civil requirements; Military requirements; Areas of responsibility; Sectorisation; Airspace structure NOTE: The simulated environment must be related to the specific rating and take account of the local airspace classification requirements	4	TSimul (Hi Fi Sim)	
1.4 Rules of the Air				
1.4.1 Provide planning, co-ordination and control actions appropriate to the General Rules	ICAO Annex 2; ICAO Annex 11, Chapter 3 NOTE: The simulated environment must be related to the specific rating and take account of the appropriate rules	4	TSimul (Hi Fi Sim)	

LAW	AVIATION LAW			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

1.4.2 Provide planning, co-ordination and control actions appropriate to the VFR, IFR, and meteorological flying conditions	ICAO Annex 2; ICAO Annex 11, Chapters 4 and 5 NOTE: The simulated environment must be related to the specific rating and take account of the appropriate rules	4	TSimul (Hi Fi Sim)	
1.4.3 Provide planning, co-ordination and control actions appropriate to the rules for minimum safe height and terrain clearance	Responsibility for terrain clearance; Terrain clearance dimensions; Minimum safe altitudes; Safe sectors; Transition level; Minimum flight level	4	TSimul (Hi Fi Sim)	
1.5 Flight Plans				
1.5.1 Obtain flight plan information in order to provide air traffic services	Types of FPL (RPL, AFIL, etc.); Supplementary information	3		
1.5.2 Use flight plan information in order to provide air traffic services	Types of FPL (RPL, AFIL, etc.); Supplementary information	3		
1.5.3 Appreciate the pilot's responsibilities in relation to adherence to flight plan	Inadvertent changes; Intended changes; Position reporting	3		
1.6 National Legislation and Procedures				
1.6.1 Describe the methods by which national regulations are implemented in the APS/RAD/TC or ACS/RAD/TC endorsement		2		

LAW	AVIATION LAW			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

1.7 Special National Legislation and Procedures				
1.7.1 Provide planning, co-ordination and control actions in accordance with special national legislation and procedures	e.g. Security; Environmental (noise abatement, conservation areas, fuel jettisoning); Sensitive areas (hospitals, VIP residences); Priority allocation; Special purpose codes	4	TSimul (Hi Fi Sim)	
2 Holding				
Students shall describe holding patterns and procedures.				
2.1 Holding IFR				
2.1.1 Describe types of holding patterns	Published; Non-published; Extended Link to ATM 10	2		
2.1.2 Describe an ICAO holding pattern	ICAO Doc 8168 - Parts of an IFR holding pattern; Entry/exit procedures; Dimensions of patterns; Protected airspace; Holding areas; Alignment; Rates of turns; Holding times; Expect further clearance; Expected Approach Times (EATs) Link to ATM 7.10	2		
2.1.3 Describe the use and purpose of holding	Effect of speed; Effect of level used; Effect of navigation aid in use Link to ATM 7.10	2		

LAW	AVIATION LAW			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

2.2 Holding VFR				
2.2.1 Describe the purpose and principles of VFR holding		2		
3 ATC Licensing				
Students shall appreciate the legal aspects associated with the ATC Licence (European Manual of Personnel Licensing - Air Traffic Controllers [EATMP, 2000] - L1).				
3.1 Privileges and conditions				
3.1.1 Describe the conditions which must be met for the issue and maintenance of the APS/RAD/TC or ACS/RAD/TC rating	European Manual of Personnel Licensing - Air Traffic Controllers (EATMP, 2000 - L1)	2		
3.1.2 Describe the privileges associated with the APS/RAD/TC or ACS/RAD/TC rating		2	StBf	
3.2 Incident/ Accident				
3.2.1 Explain the procedures used following an incident/accident	National regulations	2		

Terminal Area Control Endorsement (8/6)

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

Students shall apply operational procedures to ensure a safe, orderly and expeditious service.				
1 Air Traffic Services and Airspace Management				
Students shall provide the appropriate service.				
1.1 Air Traffic Control Services				
1.1.1 Provide the appropriate Air Traffic Control Services	ICAO Annex 2; ICAO Doc 7030; ICAO Annex 11; ICAO Doc 4444; National docs; Operation manuals	4	TSimul (Sim)	
1.1.2 Appreciate own area of responsibility	NOTE: The simulated environment must be related to the specific rating	3	StBf	
1.2 Flight Information Service				
1.2.1 Explain the responsibility for the provision of a flight information service	ICAO Doc 4444, Part 2	2		
1.2.2 Relay appropriate information concerning the location of other conflicting traffic	Traffic information; Essential traffic information	3	TSimul (Hi Fi Sim)	
1.2.3 Provide flight information service	ICAO Doc 4444	4	TSimul (Hi Fi Sim)	
1.2.4 Use radar for the provision of flight information service	ICAO Doc 4444; Information to identified aircraft concerning: traffic, weather, navigation	3	TSimul (Hi Fi Sim)	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

1.3 Alerting Service				
1.3.1 Explain the responsibility for the provision of an alerting service	ICAO Annex 11	2		
1.3.2 Provide appropriate action in abnormal situations	ICAO Doc 4444; Special codes; Seek assistance (TRM); Checklist; National legislation/ requirements; Overdue action; Emergency action; Uncertainty; Alert; Distress	4	StBf TSimul (Hi Fi Sim)	
1.3.3 Respond to distress and urgency messages and signals		3	TSimul (Hi Fi Sim)	
1.3.4 Apply national requirements in abnormal situations	Priority allocation; Special purpose codes	3	TSimul (Hi Fi Sim)	
1.3.5 Co-ordinate with RCC		4	TSimul (Hi Fi Sim)	
1.3.6 Provide appropriate action in abnormal situations using radar derived information		4	TSimul (Hi Fi Sim)	
1.4 Air Traffic Flow Management				
1.4.1 Apply principles of air traffic flow management	Working principles of ATFM; Flexible use of airspace; Free flight	3	TSimul (Hi Fi Sim)	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

1.4.2 Organise traffic flows and patterns to take account of airspace boundaries	Civil and military; Controlled; Uncontrolled; Advisory; Restricted; Danger; Prohibited; Special rules; Sector boundaries; National boundaries; FIR boundaries; Delegated airspace; Transfer of control; Transfer of communications; En-route; Off-route Link to Aviation Law 1.3	4	TSimul (Hi Fi Sim)	
1.4.3 Organise traffic flows and patterns to take account of radar coverage		4		
1.4.4 Organise traffic flows and patterns to take account of areas of responsibility	TMA	4	TSimul (Hi Fi Sim)	
1.4.5 Balance demand against capacity	Capacity of adjacent sectors; Capacity of own sector; Evaluation of personal traffic load; Evaluation of other sources of predicted traffic load	5	TSimul (Hi Fi Sim)	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

1.4.6 Inform supervisor of situation	e.g. Abnormal situations; Decrease in sector capacity; Limitations on systems and equipment; Changes in workload/capacity; Relevant information (e.g. reported ground-based incidents, forest fire, smoke, oil pollution); Unusual meteorological conditions	3	TSimul (Hi Fi Sim)	
1.4.7 Apply flow management procedures		3		
1.5 Airspace Management (ASM)				
1.5.1 Appreciate the working principle of airspace management	FUA	3		
1.5.2 Organise traffic to take account of airspace management	Conditional routes	4		
2 Communication				
Students shall appreciate the necessity for effective communication and use approved phraseology.				
2.1 Effective Communication				
2.1.1 Analyse examples of pilot and controller communication for effectiveness		4		

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

2.1.2 Explain the need for approved phraseology	ICAO Doc 4444, Part 10; ICAO Doc 9432; Standard words and phrases as contained in ICAO Annex 10, Chapter 5	2		
2.1.3 Use ICAO approved phraseology	ICAO Doc 4444, Part 10; ICAO Doc 9432; Standard words and phrases as contained in ICAO Annex 10, Chapter 5	3	TSimul (Hi Fi Sim)	
2.1.4 Use national approved phraseology when applicable		3		
2.1.5 Perform communication effectively	Transmission techniques	3	TSimul (Hi Fi Sim)	
2.2 Phraseology for Unusual Events				
2.2.1 Analyse examples of pilot and controller communication for effectiveness		4		
2.2.2 Interpret the rules to provide an effective service where approved phraseology is not available	Receiver (RX) only; Transmitter (TX) only; Speechless aircraft; Incomplete messages	5		
2.3 Mode S Data Transfer				
2.3.1 Appreciate the use of Mode S	Data which can be exchanged; Limitations; Advantages; Disadvantages	3		

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

3 ATC Clearances and Instructions				
Students shall issue appropriate ATC clearances and instructions.				
3.1 ATC Clearances				
3.1.1 Provide appropriate ATC clearances	e.g. Climb; Joining; En-route	4	TSimul (Hi Fi Sim)	
3.2 ATC Instructions				
3.2.1 Provide appropriate ATC instructions	e.g. SSR Code	4	TSimul (Hi Fi Sim)	
4 Co-ordination				
Students shall understand the need for, and conduct co-ordination.				
4.1 Necessity				
4.1.1 Identify the need for co-ordination		3		
4.2 Tools and Methods				
4.2.1 Use the available tools for co-ordination methods	e.g. Electronic transfer of light data; Telephone; Interphone; Intercom; Direct speech; Radiotelephone; Local agreements	3	TSimul (Hi Fi Sim)	
4.3 Co-ordination Procedures				
4.3.1 Initiate appropriate co-ordination	Delegation/transfer of responsibility for air/ground communications and separation; transfer of control	3	TSimul (Hi Fi Sim)	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

4.3.2 Analyse effect of co-ordination requested by an adjacent operational position	Delegation/transfer of responsibility for air/ground communications and separation; Transfer of control	4	TSimul (Hi Fi Sim)	
4.3.3 Select, after negotiation, an appropriate course of action	Including the cases: When additional traffic cannot be accepted by adjacent control position; When additional traffic cannot be accepted by own control position	5	TSimul (Hi Fi Sim)	
4.3.4 Ensure the agreed course of action is carried out		4	TSimul (Hi Fi Sim)	
5 Altimetry and Level Allocation				
Students shall allocate appropriate levels to aircraft.				
5.1 Altimetry				
5.1.1 Calculate appropriate levels	e.g. TRL; TA; Transition layer; Height; Flight level; Altitude; Vertical distance to airspace boundaries	3		
5.1.2 Allocate levels (height, altitude, flight level) according to altimetry data		4	TSimul (Hi Fi Sim)	
5.1.3 Ensure separations according to altimetry data	e.g. TRL; TA; Transition layer; Height; Flight level; Altitude; Vertical distance to airspace boundaries	4	TSimul (Hi Fi Sim)	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

5.2 Terrain Clearance				
5.2.1 Integrate safe vertical distance from terrain into control actions	e.g. Lowest available flight level; Minimum safe altitude; Minimum sector altitude	4	TSimul (Hi Fi Sim)	
5.2.2 Ensure safe vertical distance from terrain	e.g. Radar vectoring area; Lowest available flight level; Minimum safe altitude	4	TSimul (Hi Fi Sim)	
6 Separation Standards				
Students shall select and maintain appropriate separation between aircraft.				
6.1 Radar Separation				
6.1.1 Describe how radar separation is applied	On an analogue radar display; On a synthetic radar display; Between primary radar blips; Between secondary radar responses; Primary vs secondary Radar Position Symbols (RPS)	2		
6.1.2 Provide radar separation	ICAO Doc 4444; ICAO Doc 7030; Standard; Increased; Reduced; Emergency separations; Speed control	4	TSimul (Hi Fi Sim)	
6.1.3 Provide radar separation by practising radar vectoring in a variety of situations	Transit; Meteorological phenomena; Vectoring for approach; Departure vs transit vs arrival	4	TSimul (Hi Fi Sim)	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

6.2 Vertical Separation				
6.2.1 Provide standard vertical separation	ICAO Doc 4444; ICAO Doc 7030; Level allocation; During climb/descent; Rate of climb/descent	4	TSimul (Hi Fi Sim)	
6.2.2 Provide increased vertical separation	ICAO Doc 4444; ICAO Doc 7030; Level allocation; During climb/descent; Rate of climb/descent	4	TSimul (Hi Fi Sim)	
6.2.3 Provide reduced vertical separation	ICAO Doc 4444; ICAO Doc 7030; Level allocation; During climb/descent; Rate of climb/descent	4	TSimul (Hi Fi Sim)	
6.2.4 Provide emergency vertical separation	ICAO Doc 4444; ICAO Doc 7030; Level allocation; During climb/descent; Rate of climb/descent	4	TSimul (Hi Fi Sim)	
6.2.5 Provide vertical separation in a radar environment	Into/out of radar cover; Radar failure; Mode-C derived information	4	TSimul (Hi Fi Sim)	
6.3 Horizontal Separation				
6.3.1 Provide longitudinal separation in a radar environment	Within radar coverage: Speed control; Mach number speed control	4	TSimul (Hi Fi Sim)	
6.4 Delegation of Separation				
6.4.1 Delegate separation in the case of aircraft continuing visually		4	TSimul (Hi Fi Sim)	
6.4.2 Delegate separation to pilots in the case of VMC climb/descent		4	TSimul (Hi Fi Sim)	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

6.5 Wake Turbulence Separation				
6.5.1 Provide wake turbulence separation		4	TSimul (Hi Fi Sim)	
7 Data Display				
Students shall analyse data in order to manage air traffic.				
7.1 Data Management				
7.1.1 Update the data display to accurately reflect the traffic situation	Information displayed; Strip-marking procedures; Electronic information data displays; Actions based on traffic display information; Calculation of EETs	3	TSimul (Hi Fi Sim)	
7.1.2 Analyse pertinent data on data displays		4	TSimul (Hi Fi Sim)	
7.1.3 Organise pertinent data on data displays		4	TSimul (Hi Fi Sim)	
8 Operational Environment				
Students shall recognise and maintain the integrity of the simulated operational environment.				
8.1 Integrity of the Operational Environment				
8.1.1 Obtain information concerning the operational environment	e.g. Briefing; Takeover; Notices; Local orders; Verify information	3	TSimul (Hi Fi Sim)	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

8.1.2 Check and maintain the integrity of the operational environment	e.g. Integrity of displays; Verify the information provided by displays	3	TSimul (Hi Fi Sim)	
8.1.3 Inform the relieving controller of the operational environment	e.g. Briefing; Takeover; Notices; Local orders; Verify information	3	TSimul (Hi Fi Sim)	
8.2 Verification of the Currency of Operational Procedures				
8.2.1 Check all relevant documentation before managing traffic	e.g. Briefing; LOAs; NOTAM; AIC	3	TSimul (Hi Fi Sim)	
8.2.2 Apply procedural changes while managing traffic		3	TSimul (Hi Fi Sim)	
9 Provision of Control Service				
Students shall provide an appropriate control service, applicable to the specific rating.				
9.1 General				
9.1.1 Describe the division of responsibility between air traffic control units	ICAO Doc 4444; National requirements	2		
9.1.2 Describe the responsibility in regard to military traffic	ICAO Doc 4444; National requirements	2		
9.1.3 Obtain operational information	ICAO Doc 4444; Local operational manuals	3	TSimul (Hi Fi Sim)	
9.1.4 Interpret operational information		5	TSimul (Hi Fi Sim)	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

9.1.5 Organise forwarding of operational information		4	TSimul (Hi Fi Sim)	
9.1.6 Integrate operational information into control decisions		4	TSimul (Hi Fi Sim)	
9.2 Terminal Control				
9.2.1 Explain the responsibility for the provision of a terminal radar control service	ICAO Doc 4444; Local operational manuals	2	StBf	
9.2.2 Explain the functions that can be performed with the use of radar derived information in a terminal radar control service	Holding; Approach procedures; Sequencing; Calculation of EATs; Missed approach procedures; Departing traffic; Overflying traffic	2	StBf	
10 Holding				
Students shall manage holding traffic.				
10.1 Holding				
10.1.1 Use holding patterns	ICAO Doc 4444; separation from holding patterns Link to Aviation Law 2	3	TSimul (Hi Fi Sim)	
10.1.2 Issue holding instructions		3	TSimul (Hi Fi Sim)	
10.1.3 Calculate expected onward clearance times		3	TSimul (Hi Fi Sim)	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

10.1.4 Consider the effect of: wind, aircraft speed, rate of turn, height, aircraft type, aircraft performance		2	TSimul (Hi Fi Sim)	
10.1.5 Allocate holding levels		4	TSimul (Hi Fi Sim)	
10.1.6 Provide vertical separation between aircraft in a holding pattern		4	TSimul (Hi Fi Sim)	
10.1.7 Provide vertical separation between aircraft in a holding pattern and transiting aircraft		4	TSimul (Hi Fi Sim)	
10.1.8 Provide separation between aircraft in a holding pattern and departing traffic		4	TSimul (Hi Fi Sim)	
10.1.9 Update Expected Approach Times (EATs)		3	TSimul (Hi Fi Sim)	
10.1.10 Manage holding traffic on intermediate approach procedures		4	TSimul (Hi Fi Sim)	
10.1.11 Organise the traffic landing sequence in a holding pattern	Change of sequence due to: Company preference; Aircraft performance; Aircraft approach capability; ILS categories	4	TSimul (Hi Fi Sim)	
10.2 Holding in a Radar Environment				
10.2.1 Provide vectors to aircraft entering a holding pattern		4	TSimul (Hi Fi Sim)	

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

10.2.2 Ensure vertical separation exists before radar separation is lost		4	TSimul (Hi Fi Sim)	
10.2.3 Provide vectors to transiting aircraft to ensure radar separation from a holding area		4	TSimul (Hi Fi Sim)	
10.2.4 Provide vectors to aircraft leaving a holding pattern		4	TSimul (Hi Fi Sim)	
10.2.5 Ensure re-identification of aircraft leaving a holding pattern		4	TSimul (Hi Fi Sim)	
10.2.6 Maintain vertical separation until radar separation is established		3	TSimul (Hi Fi Sim)	
11 Radar Identification				
Students shall: i. establish and maintain radar identification; ii. respond to a loss of radar identification.				
11.1 Establishment of Radar Identification				
11.1.1 Apply the methods of establishing radar identification using primary radar	ICAO Doc 4444	3	TSimul (Hi Fi Sim)	
11.1.2 Appreciate the precautions when establishing radar identification using primary radar		3		

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

11.1.3 Apply methods of establishing radar identification using secondary radar		3	TSimul (Hi Fi Sim)	
11.1.4 Appreciate the precautions when establishing radar identification using secondary radar		3	TSimul (Hi Fi Sim)	
11.1.5 Apply procedures in the case of misidentification		3	TSimul (Hi Fi Sim)	
11.2 Maintenance of Radar Identification				
11.2.1 Appreciate the necessity to maintain radar identification at all times		3		
11.3 Loss of Radar Identity				
11.3.1 Recognise when an aircraft identification is lost or in doubt	e.g. Out of radar coverage; Loss of radar service; Weather clutter; Other clutter; Garbling	1	TSimul (Hi Fi Sim)	
11.3.2 Apply methods to re-establish radar identification		3	TSimul (Hi Fi Sim)	
11.3.3 Respond to loss/doubt concerning radar identification	Non-radar procedures	3	TSimul (Hi Fi Sim)	
11.4 Position Information				
11.4.1 Appreciate the circumstances when radar position information should be passed to the aircraft		3		

ATM	AIR TRAFFIC MANAGEMENT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**
11.5 Transfer of Identity				
11.5.1 Apply the methods of transfer of radar identification		3	TSimul (Hi Fi Sim)	
11.5.2 Appreciate the precautions when transferring radar identification		3	TSimul (Hi Fi Sim)	

L = level

Meteorology

No additional dedicated training event planned after Module 6.

Terminal Area Control Endorsement (8/6)

NAV	NAVIGATION			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

Students shall analyse all navigational aspects in order to organise the traffic.				
1 Applied Navigation				
Students shall appreciate the information on maps and charts and integrate this into control decisions.				
1.1 Maps and Charts				
1.1.1 Use maps and charts for planning and co-operation purposes		3	StBf	
1.2 Pilot Interpreted Ground-based System				
1.2.1 Estimate the behaviour for aircraft according to the operational status of navigational ground-based systems	Limitations of navigation aids; Status of NAVAIDS	3		
1.3 On-board Systems				
1.3.1 Estimate the behaviour of aircraft according to the operational status of navigational on-board systems	Limitations of on-board navigational systems	3		
1.4 Satellite-based Systems				
1.4.1 Estimate the behaviour of aircraft according to the operational status of navigational satellite-based systems	GPS; GLONASS; GNSS	3		

NAV	NAVIGATION			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

1.5 Future Developments				
1.5.1 Be informed about existing projects and developments which will impact on the work in the future	e.g. Briefing; Seminars; Courses; Workshops; Technical journals; Aviation journals	0		
1.6 Navigation Assistance				
1.6.1 Evaluate the necessary information to be provided to pilots in need of navigation assistance	Nearest most suitable aerodrome; Track; Heading; Distance; Aerodrome information; Any other navigation assistance relevant at the time	5	StBf	
1.6.2 Assist aircraft observed to be deviating from its known intended route		3		

Terminal Area Control Endorsement (8/6)

ACFT	AIRCRAFT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

Students shall assess aircraft performance to integrate it into traffic organisation.				
1 Aircraft Instruments				
Students shall understand the relevance of the cockpit information presented to the pilot.				
1.1 Cockpit Instruments				
1.1.1 Integrate the information provided by the pilot into the traffic situation	Flight instruments; Engine instruments; Navigational instruments; NDB (ADF); VOR (TACAN); DME; ILS; MLS; Additional instruments; TCAS; SSR transponder; Head up display; GPWS; Wind shear indicator; Weather radar; FMS; EFIS	4		
2 Aircraft Types and Categories				
Students shall characterise wake turbulence and ICAO approach categories.				
2.1 Wake Turbulence Categories				
2.1.1 Characterise each wake turbulence category and explain how to prevent their effect on other aircraft		2		
2.2 ICAO Approach Categories				
2.2.1 Characterise each ICAO approach category and explain why procedures are established accordingly		2		

ACFT	AIRCRAFT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

2.3 Planning				
2.3.1 Consider aircraft categories for planning purposes	Categories A, B, C, D, E	2		
3 Factors Affecting Aircraft Performance				
Students shall integrate aircraft performance factors in the provision of terminal control.				
3.1 Climb				
3.1.1 Integrate the effect of factors affecting aircraft during climb into the analysis of traffic situations		4		
3.2 Descent and Initial Approach				
3.2.1 Integrate the effect of factors affecting aircraft during descent and initial approach into the analysis of traffic situations		4		
3.3 Final Approach and Landing				
3.3.1 Estimate the influence of factors affecting aircraft during final approach and descent	Aircraft configuration; Weight; Meteorological conditions; Runway conditions	3		
3.3.2 Integrate the influence of factors affecting aircraft during final approach and descent in the management of the traffic		4		
3.4 Economic Factors				
3.4.1 Integrate consideration of economic factors into control actions	Routing; Flight level; Speed; Rates of climb or descent	4		

ACFT	AIRCRAFT			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

3.4.2 Use continuous climb techniques where applicable		3		
3.4.3 Use direct routing where applicable		3		
3.5 Ecological Factors				
3.5.1 Integrate ecological restrictions into traffic planning and control action	Fuel dumping; Noise abatement procedures; Minimum flight levels	3		
3.6 Miscellaneous Factors				
3.6.1 Integrate operational requirements into planning	e.g. Military flying; Calibration flights; Aerial photography	4		
3.6.2 Explain the affect of antenna shadowing on RTF communications		2		
3.6.3 Explain the affect of antenna shadowing on SSR operation		2		
3.6.4 Integrate factors effecting aircraft into planning	Message relays regarding performance	4		
3.6.5 Explain the operation of aircraft additional equipment	e. g. Radios (number of); Emergency radio; SELCAL	2		
3.6.6 Explain the operation of aircraft additional equipment	Transponders; Mode A; Mode C; Mode S	2		
3.6.7 Explain the operation of aircraft additional equipment	Oxygen masks; Pressurisation; Noise interference	2		

4	**Aircraft Data**				
Students shall: i. use the standard average performance data for the provision of TMA control; ii. recognise potential or actual emergency situations; iii. apply standard solutions in the case of simple situations.					
4.1	**Performance Data**				
4.1.1	Integrate the know aircraft performance data into control action decisions	Rate of climb/descent; Cruising speed; Ceiling	4	TSimul (Hi Fi Sim)	

Human Factors, Equipment and Systems, Professional Environment and Unusual/Emergency Situations

There is no additional dedicated training event planned after Module 6.

Terminal Area Control Endorsement (8/6)

DEGS	DEGRADED SYSTEMS CAPABILITY			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**
Students shall integrate system degradation procedures in the management of air traffic.				
1 Communication Equipment				
Students shall ensure the transfer of data by alternative methods.				
1.1 Ground/Air Radio Equipment				
1.1.1 Recognise that ground radio equipment has degraded	e.g. VHF; UHF; HF	1	Les	
1.1.2 Provide information to aircraft using standby/backup equipment		4	TSimul (Hi Fi Sim)	
1.2 Ground/Ground Equipment				
1.2.1 Recognise that equipment has degraded	e.g. Telephone; Interphone; Intercom	1	Les	
1.2.2 Provide information to adjacent sectors by using standby/backup equipment		4	TSimul (Hi Fi Sim)	
1.3 Data Link Equipment				
1.3.1 Recognise that data link equipment has degraded	e.g. Mode S; Automatic data transfer; automatic co-ordination	1	Les	
1.3.2 Use alternative methods of transferring data between ground and aircraft	e.g. Ground/air radio	3	Les TSimul (Hi Fi Sim)	

L = level

DEGS	DEGRADED SYSTEMS CAPABILITY			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

1.3.3 Use alternative methods of transferring data between units/work stations	e.g. Telephone; Direct pointing; Intercom	3	Les TSimul (Hi Fi Sim)	
2 Surveillance Equipment				
Students shall respond to degradation of surveillance equipment.				
2.1 Partial or Total Display Degradation				
2.1.1 Recognise that surveillance equipment has degraded	Partial power failure; Loss of certain facilities; Total failure	1	Les	
2.1.2 Integrate remedial procedures and/or techniques	e.g. Inform adjacent sectors; Inform aircraft; Apply vertical separation (emergency, increased); Increased radar separation; Reduce the number of aircraft entering area of responsibility; Transfer aircraft to another unit	4	Les TSimul (Hi Fi Sim)	
3 Processing Systems				
Students shall respond to degradation in the processing systems associated with the surveillance equipment.				
3.1 ATC Processing System Degradation				
3.1.1 Recognise a system degradation	e.g. FDPS; RDPS; Software processing of surveillance display	1	Les	
3.1.2 Integrate appropriate procedure following a processing system degradation	e.g. National procedures; Local unit procedures	4	Les TSimul (Hi Fi Sim)	

DEGS	DEGRADED SYSTEMS CAPABILITY			
Objectives	**Training Content**	**L**	**Type of Training Event**	**Educational Material and References**

L = level

4 Navigation Equipment				
Students shall respond to the degradation of non-surveillance navigation equipment.				
4.1 Navigation Aid Degradation				
4.1.1 Recognise when a navigation equipment failure will effect operational ability	e.g. VOR; Approach aid; Navigation aids	1	Les	
4.1.2 Integrate appropriate procedures in the event of a navigation equipment failure	e.g. Vertical separation (standard, emergency); Other non-radar separation (geographical, visual); Inform aircraft; Seek assistance from adjacent units	4	TSimul (Hi Fi Sim)	

Aerodromes

There is no additional dedicated training event planned after Module 6.

ANNEX A: EATMP COMMON CORE CONTENT CONCEPTS

1. Concept of Training Events

The objectives indicate what is expected from the student. How to train him/her to achieve the objectives is indicated in the training plans by the choice of training events.

Training Events are the elementary unit of a training plan. Through their type, the training designer indicates to the instructor which method and which media are the more adequate to teach an objective.

The choice of these main media and method does not exclude the use of additional ones within the same training event, if they suit its quality and efficiency. The training plans are a help to prepare training and to plan resources but their implementation requires flexibility, interpretation and adaptation by the instructor.

The list of training events (see 1.2) includes those currently used in Common Core Content for ATCO training. It is not exhaustive and should benefit from validation and upgrading to incorporate best practices and latest didactical or technological progress. This list should be used as a guideline for the development of future training plans. It will then be necessary to adapt it to the new requirements and to the specific target population.

Definitions for the training methods, media, learning rates and modes of delivery listed in 1.2 can be found in 1.3. For further detail the reader shall refer to the document entitled 'Specifications on Training Methods and Tools' (EATMP, 2000c – T16). It is to be noted that some topics have been added or updated since the publication of this reference document.

As essential principles, it is acknowledged that:

- During a single training event, several methods or several media might be used. In the plans, the one indicated is the more significant (for instance: a simulation includes a briefing but the only indicated method is simulation) or the most dependant on the adequate equipment (for instance: in a lesson, both paper documents and projector displaying computer presentation are used: only visual aid (Vsl) is indicated as a media, text (txt) is not mentioned).

- Using his judgement, the instructor might deviate from these plans according to the group feedback.

In addition to the accurate definitions of the training events, additional locutions might be used to define wide modes of training (for instance, e-learning may be used to group Computer-/Web-based Training (CWBT) and

virtual classroom, Problem-based Learning (PBL) to define a pedagogical strategy.

1.1 Definitions of Training Events used in Common Core Content

The following verbal definitions are useful to the reader who is not a specialist and does not have the time to read the detailed description.

The list with the four parameters remains the reference for the definition of the training events (see 1.3) and for the possible creation of additional training events.

Case (Case)

Training event based on the case method (in which a real or fictional situation or series of events are presented to trainees for their analysis and proposal of possible solutions). Most of the times, it is a group session with the support of texts, visual aids and multimedia computer; sometimes it is individual training.

Computer-Based Practical Exercises (CBPE)

The exercises are presented to the group by an instructor using visual aids and deciding, from students answers, when and how moving to next exercises.

Computer-/Web-Based Training (CWBT)

Provision of knowledge and skills by means of a computer with numerous interactions, student response analysis and free individual rhythm of learning (self-paced manner). The source is indifferently local or accessed through a network (Intranet or Internet).

Group Work (GrW)

The instructor facilitates the discovery of problems and the study of reference solutions by a group of students, with the help of text or visual aids.

Hands On (HO)

Supervised practice on real equipment that is not in operation. Emulation on multimedia computer is sometimes sufficient. Text is used as additional data (instructions, operating manual, questionnaire, etc.).

Multimedia or sound Laboratory (Lab)

Lessons or exercises are provided in a room equipped with a set of individual positions. Instructor can monitor students individually. Rhythm of learning is self-paced or restricted according to training material and instructor interventions.

Lecture (Lec)

A straight talk or exposition, possibly using visual or other aids, but without group participation other than questions, usually at the conclusion.

Lesson (Les)

A training technique incorporating a number of instructional techniques designed to ensure the participation of the students in reaching the specified behavioural objectives. The instructor is able to ascertain whether material is being assimilated.

Part-Task Practice (PTP)

Pre-simulation which allows restricted or real-time practice of a part of the skills that are necessary for the operational task in a realistic environment (PTT or Sim).

Skill Acquisition (SA)

Pre-simulation which allows self-pace, restricted or real-time practice of a part of the skills necessary for the operational task in a possibly non-realistic environment (e.g. 2-D aerodrome).

Individual Simulation (ISimul)

Real-time full-task simulation involving one single student.

Team Simulation (TSimul)

Real-time full-task simulation involving an individualised cell made of several students. A team consists of two or more students who are required to work together on related or interacting tasks.

Group Simulation (GSimul)

Real-time full-task simulation involving several individual or team simulations simultaneously.

Structured Briefing (StBf)

The training event StBf (Structured Briefing) is a planned group introduction for a simulation (or a series of simulations) stating the objectives of the exercise, the simulated operational procedures, the operation of the simulator, the expected role of each team member, including the instructor, and possibly demonstrations of simulation exercises. The training event StDf (Structured Debriefing) is a planned group review and discussion of the outcome of a simulation (or a series of simulations). The discussion is centred on the strategies chosen and their results .At the level of training plan, StBf includes both StBf and StDf. Differentiation is done at the implementation.

Supervised Practice (Sup Pract)

Manipulations of equipment where the instructor provides the necessary feedback.

Visit (Vis)

The visit is considered as individual when each student has the opportunity to develop questions, discussions and to practise handover individually. If this activity is not important enough, the visit is considered as a group activity.

Virtual Classroom (VC)

Distance training of a group of persons connected in synchronous mode and facilitated or lectured by an instructor.

1.2 List of Training Events used in Common Core Content

Training events are as often as possible based on a unique occurrence of parameters (for instance CBPE is always Ex + Vsl + Rstd + G). In this case, the use of the parameters in the training plans is not useful and could be omitted (when this is not possible, the training event name and the complex area are in bold).

Sometimes one of the parameters is so prevailing that its name is given to the training event (for instance “Lecture”).

Training Event Name	T.E. Abbr.	Method	Media	Rate	Mode
Case	Case	Case	Vid, MMC, Vsl (Backup Txt)	Rstd	I, G
Computer-based Practical Exercises	CBPE	Ex	Vsl	Rstd	G
Computer-/Web-based Training	CWBT	Inter	MMC	Self	I
Group Work	GrW	Facil	Vsl (Backup Txt)	Rstd	G
Hands On	HO	Sup Prac	RE	Rstd, Real	G
Multimedia or sound Laboratory	Lab	Les Ex	MMC, sound	Self, Rstd	I
Lecture	Lec	Lec	Vsl (Backup Txt)	Rstd	G
Lesson	Les	Les	Vsl (Backup Txt)	Rstd	G
Part-Task Practice	PTP	Pre-Simul	PTT	Rstd	I
Skill Acquisition	SA	Pre-Simul	OTD	Self	I
Structured Briefing	StBf	Brief	Vsl	Rstd	G
Individual Simulation	ISimul	Simul	Sim, Hi Fi Sim	Real	I
Team Simulation	TSimul	Simul	Sim, Hi Fi Sim	Real	I
Group Simulation	GSimul	Simul	Sim, Hi Fi Sim	Real	G
Supervised Practices	Sup Pract	Sup Pract	Vsl (Backup Txt), MMC, RE	Rstd	G
Virtual Classroom	VC	Facil, Ex, Les, Lec	Net	Rstd	G
Visit	Vis	Sup Pract	RE	Rstd	G, I

1.3 The four parameters of the Training Event

1.3.1 Introduction

Our methodology to design training strategy is based on the answers to the following questions:

- What are the relations between the matter, the student and the instructor? (Training Method)
- Which media is used to carry the training message? (Media)
- Is the learning rate free or restricted or real? (Learning rate)
- Is the training individual or in group? (Mode of delivery)

To use the methodology the training designer will first try to find the appropriate type of training event within the existing list. If not found a thought should be given to the possibility that the same type could be used with a local different denomination: the four parameters should help to sort this out.

If this is not the case the additional type of training event should be characterised by its four parameters.

1.3.2 Training Methods

The training methods characterise the relations between the matter, the student and the instructor.

Lecture (Lec)

A straight talk or exposition, possibly using visual or other aids, but without group participation other than questions, usually at the conclusion.

Lesson/Demonstration (Les)

A training technique incorporating a number of instructional techniques designed to ensure the participation of the students in reaching the specified behavioural objectives. The instructor is able to ascertain whether material is being assimilated.

Case Study (Case)

A training method in which a real or fictional situation or series of events are presented to trainees for their analysis and consideration of possible solutions or problems identified. Their findings in a real situation can be compared with what actually occurred.

Exercises (Ex)

The provision and consolidation of knowledge and skills through the performances of series of exercises.

Facilitation (Facil)

Process facilitation means helping people to achieve results using facilitation techniques.

Interactive Training (Inter)

The provision of knowledge and skills by means of a computer with numerous interactions, student response analysis and allowing, when appropriate, free individual rhythm of learning (self-paced manner).

Supervised Practices (Sup Pract)

Manipulation of equipment where the instructor provides the necessary feedback.

Pre-Simulation (Pre-Simul)

The practice in restricted or real time of a part of the skills necessary for the operational task in a possibly not realistic environment (2D aerodrome for instance).

Two types of pre-simulation are detailed at the level of training event: Skill Acquisition (SA) and Part-Task Practice (PTP).

Simulation (Simul)

The provision of knowledge, skills and attitudes by means of representation of air traffic responding to any student action as real air traffic. It always includes briefing, tutoring and debriefing.

Three types of simulation are detailed at the level of training events: Individual Simulation (ISimul), Team Simulation (TSimul) and Group Simulation (GSimul).

Briefing (Brief)

Briefing is an introduction for a training event during which interruption of the student's activity is not normally anticipated (e.g. OJT and simulation). The method is used during the simulation (briefing) or planned separately (structured briefing).

Debriefing (Debrief)

A review and discussion on the outcome of a training event based on a formative assessment of that event. The technique is used during the simulation (debriefing) or planned separately (structured debriefing).

Tutoring (Tut)

The act of giving additional knowledge and guidance to an individual or small group of trainees in an off-the-job, informal training situation. Tutoring is considered as a supplementary training event and may be automated in the case of guided simulation.

Role-Play (Role)

Students act out a working model of some real-world human situation in interacting group. They are provided with background data and roles to play together with constraints which may change as the play proceeds.

1.3.3 Media

Media is the physical means by which an instructor or a training designer communicates a message. One media can use several supports (for instance, a Multimedia Computer (MMC) could use a diskette or CD-ROM, Video can use Tape, CD or DVD). In this document we are going to define the media related to simulation but shall not attempt to make an exhaustive list of the many types of support and educational materials.

Real Equipment (RE)

Equipment such as CWP, NAVAIDS, avionics or even official documents such as charts or maps either used in operational conditions (On-the-Job Training [OJT]) or in non-operational conditions (shadowing or demonstration). High-fidelity simulator may sometimes be used as a backup.

High-Fidelity Simulator (Hi Fi Sim)

A full size replica of Controller Working Position (CWP) including all equipment and computer programmes necessary to represent full tasks of the sector or the tower and their environment. A spare operational position used as simulator is a good example of Hi Fi Sim. In the case of aerodrome it includes an out-of-the-tower view.

Simulator (Sim)

A device that presents the student with a representation of the important features of the real situation and reproduces the operational conditions under which the student can practise real-time tasks directly.

Part-Task Trainer (PTT)

A training machine for the student to practise some operational functions independently of other functions which are not represented there, although they are necessarily associated to the first ones in the operational task.

Other Training Device (OTD)

A training machine which presents the student with some operational functions on a non-realistic reproduction of the operational devices. It includes a generic MMC.

Multimedia Computer (MMC)

A (networked or stand-alone) multimedia computer or workstation dedicated to one student or to a small cell. The hardware is off-the-shelf and has not been deeply modified for specific ATC purposes.

Network (Net)

A system of computers and terminals connected by communications lines.

Video (Vid)

Aids such as camera, camcorder, recorder, player, TV, monitor, projector and screen used for the generation, storage and reproduction of visual animated images and associated sounds (video, films, DVD and other). In particular, it enables to record a student performance and to replay it.

Visual Aids (Vsl)

Aids such as projectors or screens used to display computer-based presentations, animations, slides, overhead, mock-up, models and video clips, possibly associated to loud speakers or headset for the sound.

Audio Aids (Aud)

Aids to communication that utilise the sense of hearing.

Text (Txt)

The provision of written documents including handouts, books, manuals, training documents, etc.

1.3.4 Learning Rate

Self-paced Learning (Self)

A learning/teaching system whereby the learner is able to control the pace at which he/she works.

Time-restricted Learning (Rstd)

A learning/teaching system whereby the course developer or the instructor controls the pace at which the learner has to work.

Real Time (Real)

A learning/teaching system whereby the pace at which the learner has to work is the same as in real operation.

1.3.5 Mode of Delivery

Individualised Training (I)

Features of the individualised training are the provision of possibly different stimuli to each student, the separated analysis of their response and the provision of consequent new stimuli independent of the answers of other students.

Note: Instruction of a small group of students considered as an entity (for example planner and executive) is classed as individualised training. In ATC training this consideration of team building and the operational conditions very often imply that the 'learner' is a 'team' rather than an individual.

A team is:

> *… a group of two or more persons who interact dynamically and interdependently within assigned specific roles, functions and responsibilities. They have to adapt continuously to each other to ensure the establishment of a safe, orderly and expeditious flow of traffic.*

There is of course an apparent contradiction between the terms 'individualised' and 'team interaction'. This has to be understood by differentiation between 'team' and 'group'.

A typical example is a radar simulation, in area radar control, provided to twelve students, working in six teams of two (planner plus executive) on six control positions simulating the same airspace sector.

Even if the proposed air traffic is the same for the six teams and even if the training objectives are the same, the simulations will progress differently for each of the teams. In addition, the simulations are not necessarily happening at the same time. This is not 'group' training. It might be considered as 'small-group training' if the teams were always composed of the same students. Generally, this is not the case: in fact, most of the training is addressed to each individual who has to cope with a very close and very complex element (his partner in the team) among other more distant elements (other sectors, units, aircraft, etc.). The fact that each partner sometimes reacts differently

increases the individualisation of the training because none of the students can be confronted with the same situation.

Group Training (G)

All the participants are presented the same learning material under the same conditions.

1.3.6 Global Strategies

Training events are useful to describe elements of training. Additional locutions might be used to define a strategy globally applied to training. Problem-based learning and e-learning are two examples:

Problem-based Learning (PBL)

A pedagogical strategy for posing significant, contextualised, real-world situations and providing resources, guidance, instruction and self-directed learning strategies to learners as they develop content knowledge, problem-solving skills and team participation skills.

E-Learning (EL)

Encompasses a set of methods and media characterised by the use of network and computers and the possibility of distance learning. Virtual Classroom and CWBT are in particular e-learning training events.

1.3.7 List of training events parameters and abbreviations

Method	
Case Study	Case
Exercises	Ex
Lecture	Lec
Lesson/Demonstration	Les
Facilitation	Facil
Interactive Training	Inter
Pre-Simulation	Pre-Simul
Role-Play	Role
Simulation	Simul
Briefing	Brief
Debriefing	Debrief
Tutoring	Tut

Media	
Real Equipment	RE
High-Fidelity Simulator	Hi Fi Sim
Simulator	Sim
Part-Task Trainer	PTT
Other Training Device	OTD
Multimedia Computer	MMC
Network	Net
Video	Vid
Visual Aids	Vsl
Audio Aids	Aud
Text	Txt

Learning Rate	
Self-paced Learning	Self
Time-restricted Learning	Rstd
Real Time	Real

Mode	
Individualised Training	I
Group Training	G

2. Concept of Taxonomy

A taxonomy is a classification based on explicit principles. The purpose of taxonomies in the training domain is to classify training objectives.

2.1 Levels

The TF-CCC agreed on five levels numbered 1 to 5 plus an initial level (named 0) of pure information. They are defined as follows:

Level 0 "To be aware of".

Level 1 Requires a basic knowledge of the subject. It is the ability to remember essential points; the trainee is expected to memorise data and to restore it.

Level 2 Requires an understanding of the subject sufficient to enable the student to discuss intelligently. The individual is able to represent for himself or herself certain objects and events and to act upon these objects and events.

Level 3 Requires a thorough knowledge of the subject and the ability to apply it with accuracy. The student should be able to make use of his/her repertoire of knowledge to develop plans and activate them.

Level 4 Ability to establish a line within a unit of known applications following the correct chronology and the adequate method to resolve a problem situation. This involves the integration of known applications in a familiar situation.

Level 5 Ability to analyse new situations in order to elaborate and apply one or other relevant strategy to solve a complex problem. The defining feature is that the situation is qualitatively different to those previously met, requiring judgement and evaluation of options.

2.2 Definition of Action Verbs

Defining action verbs becomes increasingly difficult as the level increases for several reasons:

(i) Higher levels (4-5) and even 3 are the culmination of many actions, and can only be described by either a breakdown into component actions or by a few high level words, which are not exclusive to a particular level.

(ii) This could be compounded by making some verbs belong to several levels. This solution was rejected in order to keep things simple for the operational use (one verb - one level).

(iii) The main difference between levels 4 and 5 is novelty (qualitative) of the problem.

(iv) As each level subsumes those previous to it, as it is hierarchical, then you must naturally start running out of words.

The list is not complete, but a guideline only. In the future ATM-specific terms known to refer to that level of performance can be added.

2.3 Action Verbs

2.3.1 Definition of Verbs – Level 1

Level 1:	Requires a basic knowledge of the subject. It is the ability to remember essential points; the trainee is expected to memorise data and to retrieve it.

Verb	Definition	Example	L
			(L = Level)
Define	State what it is and what its limits are; state the definition	Define the term "alerting service"	1
Draw	Produce a picture, pattern or diagram	Draw a holding pattern	1
List	Say one after the other	List the main structure components of an aircraft	1
Name	Give name of objects or procedures	Name some components on a graphic	1
Quote	Repeat of what is written or said to underline	Quote ICAO definition of ATC service	1
Recognise	To know what it is because you've seen it before	Recognise the information disseminated through AFTN like NOTAM, SNOWTAM	1
State	Say or write in a formal or definite way	State the major wind systems on earth	1

2.3.2 Definition of Verbs – Level 2

Level 2:	Requires an understanding of the subject sufficient to enable the student to discuss intelligently. The individual is able to represent for himself or herself certain objects and events in order to act upon these objects and events.

(L = Level)

Verb	Definition	Example	L
Characterise	To describe the quality of features in something	Characterise various items of ATC equipment	2
Consider	To think carefully about it	Consider radar range	2
Demonstrate	Describe and explain; logically or mathematically proves the truth of a statement	Demonstrate how the earth is projected as a map	2
Describe	Say what it is like or what happened	Describe the methods by which telecommunication regulations are implemented	2
Differentiate	Show the differences between things	Differentiate between the various relevant charts	2
Explain	Give details about something or describe so that it can be understood	Explain the purpose and function of ICAO	2
Take account of	Take into consideration before deciding	Take wind influence into account when calculating a ground speed	2

2.3.3 Definition of Verbs – Level 3

Level 3:	Requires a thorough knowledge of the subject and the ability to apply it with accuracy. The student should be able to make use of his/her repertoire of knowledge to develop plans and activate them.

Verb	Definition	Example	L
			(L = Level)
Act	Carry out, execute		3
Apply	Use something in a situation or activity	Apply national requirements in abnormal situations	3
Appreciate	To understand a situation and know what is involved in a problem-solving situation, to state a plan without applying it	Appreciate the necessity for co-ordination. The student says that co-ordination will be done and with whom, he/she does not perform the actual co-ordination	3
Assist	Help somebody to do a job by doing part of it	Assist the pilot	3
Calculate	To discover from information you already have by arithmetic; to think about a possible cause of action in order to form an opinion or decide what to do	Calculate transition level	3
Check	Make sure the information is correct (satisfactory)	Check and maintain the integrity of working position	3
Choose	Select out of number, decide to do one thing rather than another	Choose which aircraft should be vectored	3
Collect	Assemble, accumulate, bring or come together		3
Conduct	Lead, guide	Conduct co-ordination	3

Definition of Verbs – Level 3 (continued)

Verb	Definition	Example	L
			(L = Level)
Confirm	Establish more firmly, corroborate	Confirm sequence order	3
Decode	Turn into ordinary writing, decipher	Decode weather reports and forecast	3
Encode	Put into code or cipher		3
Estimate	Form an approximate judgement of a number; Form an opinion	Estimate distance between two points	3
Execute	Perform action		3
Extract	Copy out, make extracts from, find, deduce	Extract data from a flight plan	3
Identify	Associate oneself inseparably with, establish the identity	Identify a radar blip	3
Inform	Inspire, tell	Inform the planning controller	3
Initiate	Begin, set going, originate	Initiate a co-ordination procedure	3
Input	Enter in the system	Input data	3
Issue	Send forth, publish	Issue ATC clearance	3
Maintain	Carry on, keep up, refresh	Maintain flight data display	3
Measure	Ascertain extent or quality of (thing) by comparison with fixed unit or with object of know size	Measure cross modulation in radio antenna system	3

Definition of Verbs – Level 3 (continued)

Verb	Definition	Example	L
			(L = Level)
Monitor	Keep under observation	Monitor traffic	3
Notify	Make known, announce, report	Notify runway in use	3
Obtain	Acquire easily, without research	Obtain aeronautical information	3
Operate	Conduct work on equipment	Operate electronic data transfer equipment	3
Pass	Move, cause to go, transmit	Pass essential traffic information without delay	3
Perform	Carry into effect, go through, execute	Perform co-ordination effectively	3
Record	Register, set down for remembrance or reference	Record information by writing effectively	3
Relay	Arrange in, provide with, replace by...	Relay pilot message	3
Respond	Make answer, perform answering or corresponding action	Respond to the loss of aircraft radar identification	3
Scan	Look intently at all parts successively	Scan data display	3
Transfer	Hand over	Transfer information to receiving controller	3
Update	Refresh, make up to date	Update	3
Use	Employ for a purpose, handle as instrument, put into operation	Use ICAO documentation	3
Verify	Establish truth of	Verify identity	3

2.3.4 Definition of Verbs – Level 4

Level 4:	Ability to establish a line within a unit of known applications following the correct chronology and the adequate methods to resolve a problem situation. This involves the integration of known applications in a familiar situation.

Verb	Definition	Example	L
			(L = Level)
Acquire	Gain by oneself and for oneself; obtain after research	Acquire relevant aeronautical information	4
Adjust	Change to a new position, value or setting	Adjust antenna system	4
Allocate	Assign, devote	Allocate the responsibility of separation during transfer	4
Analyse	Examine minutely the constitution of	Analyse traffic	4
Assign	Allot as a share, make over	Assign take off number	4
Co-ordinate	Bring part into proper relation	Co-ordinate with RCC	4
Comply	Act in accordance with	Comply with rules	4
Delegate	Commit authority to somebody	Delegate separation in case of aircraft continuing visually	4
Design	Conceive mental plans for	Design ... appropriate clearances and instructions	4
Detect	Discover existence of	Detect deviation from track	4
Ensure	Make safe, make certain	Ensure the agreed course of action in carried out	4

Definition of Verbs – Level 4 (continued)

Verb	Definition	Example	L
			(L = Level)
Expedite	Assist the progress of, do speedily		4
Integrate	Combine into a whole, complete by addition of parts	Integrate a transferred aircraft into the controlled traffic	4
Justify	Show the rightness of a choice or of an option	Justify and theorise the DVOR	4
Manage	Handle, wield, conduct	Manage aerodrome surface movements	4
Organise	Give orderly structure to, frame and put into working order	Organise arrival sequence	4
Predict	Forecast	Predict evolution of a conflict situation	4
Provide	Supply, furnish	Provide separation	4
Relate	Establish link with	Relate a pressure setting to an altitude	4

2.3.5 Definition of Verbs – Level 5

Level 5:	Ability to analyse new situation in order to elaborate and apply one or other relevant strategy to solve a complex problem. The defining feature is that the situation is qualitatively different to those previously met, requiring judgement and evaluation of options.

(L = Level)

Verb	Definition	Example	L
Appraise	Estimate, determine the benefit	Appraise the interest of a traffic management option	5
Assess	Estimate value or difficulty, evaluate	Assess workload	5
Balance	Weigh (a question, two arguments, etc, against each other)	Balance two control actions	5
Calibrate	Correct and adjust to enable the provision of accurate data	Calibrate NDB according to flight inspection	5
Discuss	Investigate by reasoning or argument	Discuss the impact of regulation	
Evaluate	Ascertain amount of, find numerical expression for	Evaluate workload	5
Extemporise	Produce without preparation, improvise	Extemporise phraseology in abnormal situations	5
Imagine	Form mental image of, conceive	Imagine possible actions to cope with unusual situations	5
Interpret	To decide on something's meaning or significance when there is a choice	Interpret ICAO Annexes	5
Resolve	Solve, clear up, settle	Resolve conflict	5

Definition of Verbs – Level 5 (continued)

Verb	Definition	Example	L
			(L = Level)
Review	Survey, look back on	Review previous clearance according to the latest aircraft relative positions	5
Select	Pick out as best or most suitable	Select the runway in use	5
Solve	Find answer to	Solve separation problems	5
Theorise	Extract general principles from a particular experience	Theorise the resolution of conflict between a slow and a fast aircraft	5
Troubleshoot	Trace and correct faults	Troubleshoot wrong bearing indications of a VOR	5
Validate	Make valid, ratify, confirm	Validate one radar vectoring option to expedite the traffic	5

3. Concept of ATCO Training Progression

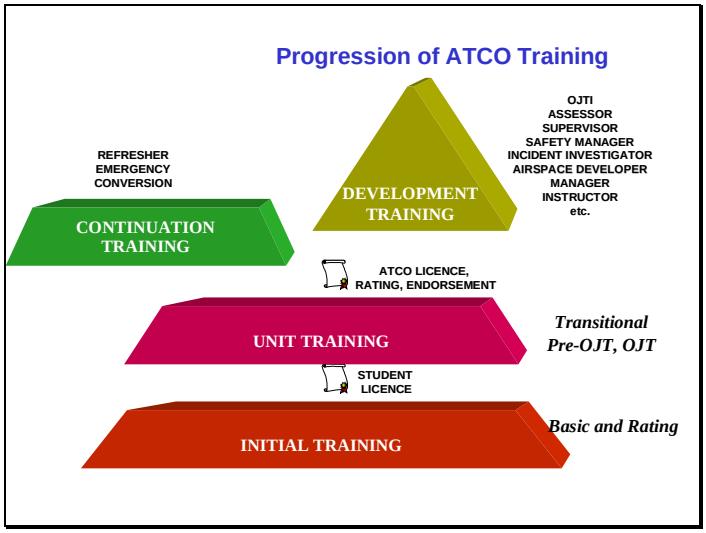


Figure 1(bis): Progression of ATCO Training

3.1 Initial Training

Training including technical subjects and ATC theory and simulator practice. The object of initial training is to prepare an *ab initio* for training at an ATC unit. It includes two phases (basic and rating) leading to a student licence:

⇨ **Basic training**

Training designed to impart fundamental knowledge and skills to enable *ab initio* air traffic controllers to progress to specialised ATC training.

⇨ **Rating training (training in the rating discipline)**

Specialised ATC training to provide knowledge and skills related to a job category and appropriate to the discipline to be pursued in the ATS environment.

3.2 Unit Training

Training comprising transitional training, pre-OJT and OJT leading a student to the obtention of an air traffic controller licence, with appropriate rating and with appropriate rating and unit endorsements:

⇨ **Transitional training**

Phase following initial training during which site-specific theoretical knowledge and understanding will be transferred to the student (or

possibly to the trainee) using a variety of methods and during which skills will be developed through the use of site-specific simulations.

⇨ **Pre-On-the-Job Training (Pre-OJT)**

Phase of locally based training during which extensive use of simulation using site-specific facilities will enhance the development of previously acquired routines and abilities to an exceptionally high level of achievement.

⇨ **On-the-Job Training (OJT)**

The integration in practice of previously acquired job-related routines and skills under the supervision of a qualified On-the-Job Instructor (OJTI) in a live traffic situation. Provision of training related to a job category in order to increase knowledge and skills and/or to prepare for new technologies.

3.3 Continuation Training

Training given to licensed or certificated personnel designed to augment existing knowledge and skills. It includes refresher, emergency and conversion training.

⇨ **Refresher training**

Refresher training is designed to review, reinforce or upgrade existing knowledge and skills (including team skills).

⇨ **Emergency training**

Training that shall be given to all controllers on a regular basis. It includes training in emergencies, in unusual situations and in degraded systems. Most of this training will be site-specific:

Emergency

A serious, unexpected and often dangerous situation requiring immediate action.

Unusual Situation

A set of circumstances which are neither habitually nor commonly experienced. The essential difference with an emergency is that the element of danger or serious risk is not necessarily present in an unusual situation.

Degraded Systems

Unusual situations which are the result of a system failure or malfunction.

⇨ **Conversion training**

Training designed to provide knowledge and skills appropriate to a change in either job category (new rating discipline, rating endorsement or unit endorsement), environment (new procedures) or system (system upgrade or change).

3.4 Development Training

Training designed to provide additional knowledge and skills demanded by a change in job profile e.g. new licence endorsement (OJTI), assessor, supervisor, safety manager, training manager, traffic flow manager or any other career development.

3.5 Denomination of the Learner

Learner is the generic term for the person performing a learning activity without any reference to his/her statute.

In the case of ATCO training, the specific names according to the training phase are:

- participants to initial training are called '*ab initio'* (they do not hold a student licence);
- participants to unit training are called 'student air traffic controllers' when they hold a student air traffic controller licence and 'trainees' when they hold an ATC licence;
- participants to continuation training or to development training are called 'trainees' (they hold an ATC licence).

ANNEX B: PROCEDURES FOR MODULE 6

1. Airspace and Unit Organisation

The vertical dimensions of Airosar FIR are from surface to FL245. Airosar TMA is an airspace within the Airosar FIR. Airosar TCL is a sector within the Airosar TMA. There are two other sectors within the Airosar FIR, Beelan and Redee. Adlin FIR is located to the west of Airosar FIR and has two sectors, Menra and Nolan – Map 1.

Within the Airosar TMA there are three controlled airspaces:

- a Control Zone surrounding the major airport, Airosar (EXAS) under the jurisdiction of Airosar Tower;
- above and around the control zone is Airosar Approach sector under the jurisdiction of Airosar Approach Control Unit;
- above and around Airosar Approach sector is a Terminal Control Area, Airosar TCL under the jurisdiction of Airosar TCL – Map 2.

Airosar Approach Control and Airosar TCL are provided from the TCL operations room.

The vertical dimensions and ICAO classifications of Airosar FIR are shown in Table 6:

Table 6: Airosar Airspace

AIRSPACE	ORGANISATIONAL SECTOR	DIMENSIONS	CLASS
Airosar CTR	Airosar Tower	SFC - 1000’	D
Airosar APP	Airosar Approach	1000’ - FL95	C
Airosar TCL	Airosar TCL	1000’ - FL 95	E
	Airosar TCL	FL 95 - FL245	C
Airosar FIR (Below TMA)		SFC - 1000’	G
Hammtown Class „F“		SFC – 1000	F

Note: A rectangular shaped airspace around Hammtown airport from surface to 1000 ft is designated ICAO Class „F“ airspace when activated – Map 2.

2. General Procedures

Note: Where no specific procedure is stated in this document, ICAO procedures shall apply.

2.1 Radar Separation

The minimum radar separation within Airosar APP is 3 NM.

Outbound aircraft shall be transferred by Airosar APP to Airosar TCL radar separated by a minimum of 5 NM, constant or increasing.

2.2 Standard Agreement

An aircraft may enter the airspace under the jurisdiction of another sector without individual co-ordination when it is following a standard route on its own navigation and it has been cleared to, or is at, an agreed level before communication is transferred to the receiving sector.

2.3 Transfer of control

The transfer of control of traffic is effective at the sector boundaries unless otherwise agreed. Transfer of communication may take place earlier.

2.4 Speed Control

All aircraft within Airosar Approach airspace shall observe a maximum speed of 250 kts IAS. Approach controllers should remove speed limitations as soon as traffic permits.

2.5 Radar Identification

The radar identification methods described in ICAO Doc 4444 shall be used.

All correlated traffic from an adjacent sector may be considered as being identified.

If the transfer of radar identity is necessary it shall be completed in accordance with the procedures described in ICAO Doc 4444.

2.6 Transition Altitude

The transition altitude is 6000 feet.

3. Outbound Procedures

All aircraft departing from EXAS will be on a SID and then cleared to FL 90 or lower requested flight level unless otherwise co-ordinated.

4. Inbound Procedures

4.1 Standard Arrival Routes

Aircraft inbound to EXAS will be routed via Standard Arrival Routes (STARs) as shown in Table 7.

Table 7: STARs

ROUTE	HOLDING AREA	STAR
GOSUT-GUN-PST-MAR-ELO	ELO	MAR 1A
MUSAB-GUN-PST-MAR-TOB	TOB	MAR 1G
REDEE-EGG-ELO	ELO	EGG 1A
MENRA-NKR-HITCH-TOB	TOB	NKR 1G

4.2 Releases from TCL to Approach Control

- Aircraft cleared to a holding fix shall be vertically separated and released in level order. Any level lower than FL 100 in or transiting the holding areas shall be co-ordinated with Approach Control.
- Transfer of communication shall be effected in level order and in sufficient time for aircraft to be given heading or holding instructions before reaching the holding fix.
- When individual release messages are necessary they shall contain one or more of the following as appropriate:
  - holding area - callsign
  - flight level - release point
  - contact point - any qualifying instructions

5. Holding Procedures

The minimum holding level at ELO and TOB is 4000 feet.

The maximum holding level available to Airosar App at ELO and TOB is FL 90.

5.1 Separation between holding and overflying aircraft

Vertical separation between overflying aircraft approaching the holding fix and aircraft already holding in the particular area is to be established before the overflying aircraft has reached the minimum distance shown in Table 8.

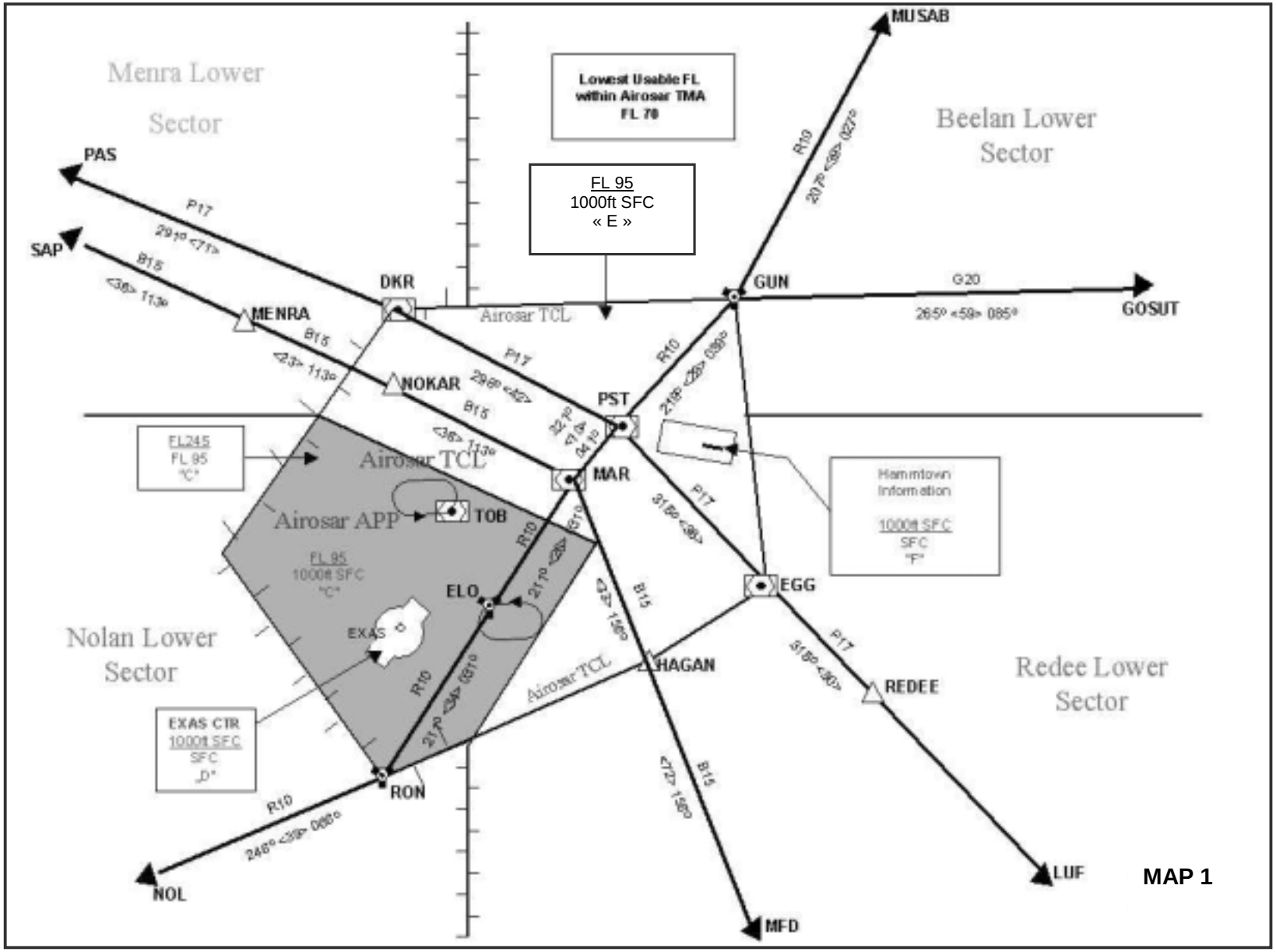
Table 8: Vertical separation from holding fix

FLIGHT LEVEL	DISTANCE FROM HOLDING FIX
FL90 and below	15 miles

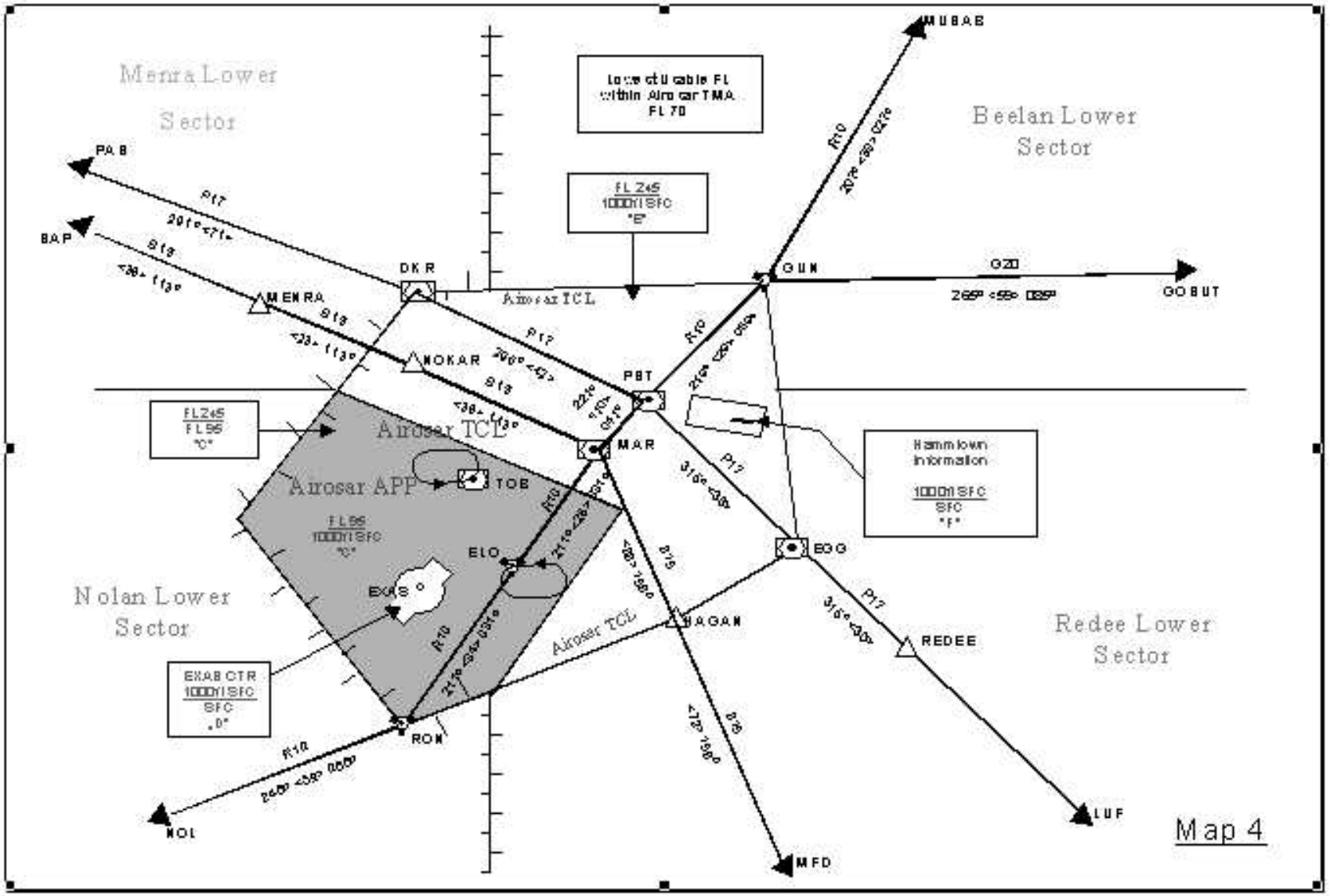
Aircraft established in the TOB holding area are separated from aircraft established in the ELO holding area up to and including FL140.

Standard ICAO holding speeds apply in the TOB and ELO holding patterns.

Map 1: Airosar TMA



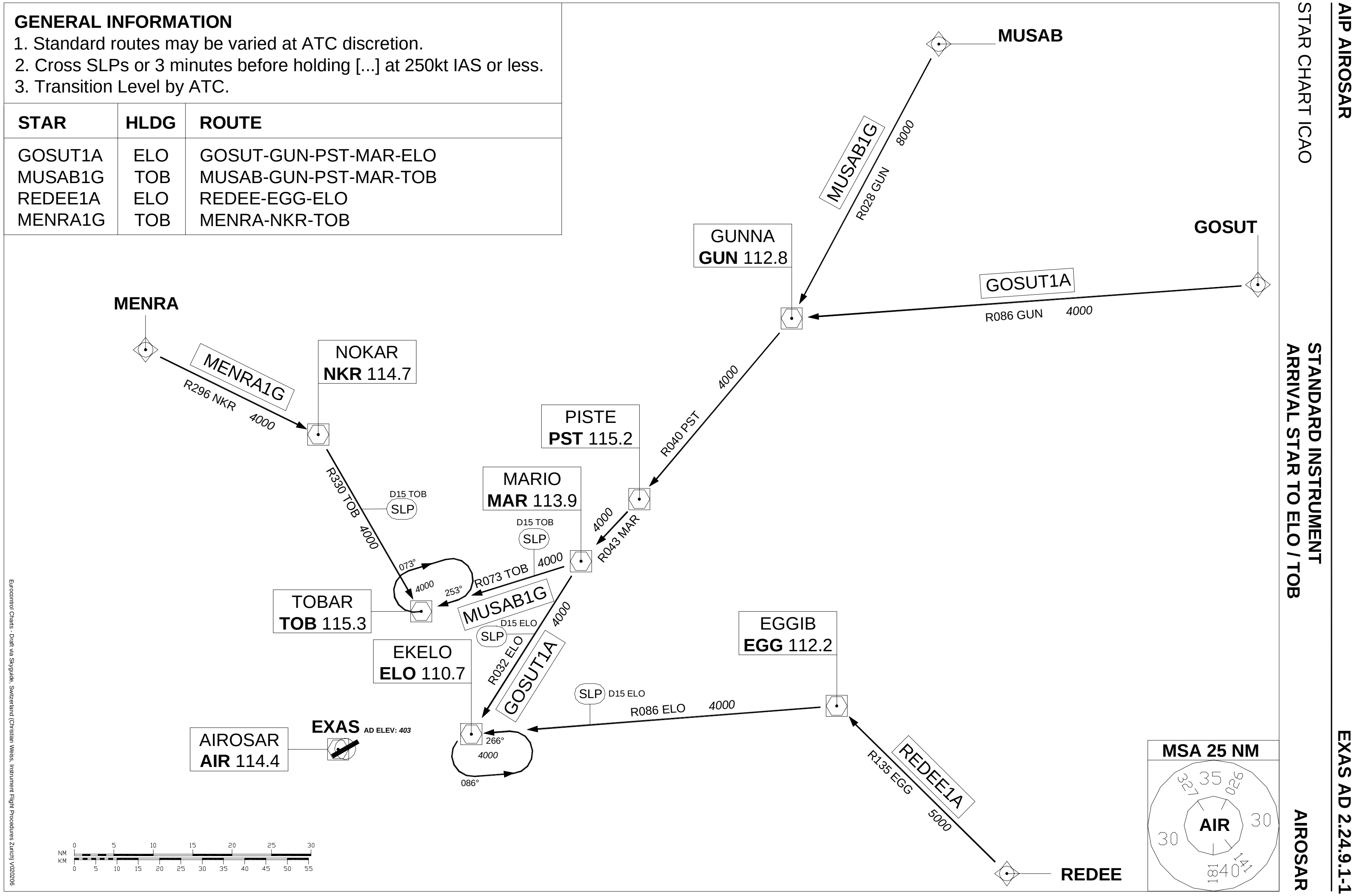
Map 2: Airosar TCL



GENERAL INFORMATION

1. Standard routes may be varied at ATC discretion.
2. Cross SLPs or 3 minutes before holding [...] at 250kt IAS or less.
3. Transition Level by ATC.

STAR	HLDG	ROUTE
GOSUT1A	ELO	GOSUT-GUN-PST-MAR-ELO
MUSAB1G	TOB	MUSAB-GUN-PST-MAR-TOB
REDEE1A	ELO	REDEE-EGG-ELO
MENRA1G	TOB	MENRA-NKR-TOB



AIP AIROSAR **EXAS AD 2.24.7.1-1**

SID CHART ICAO

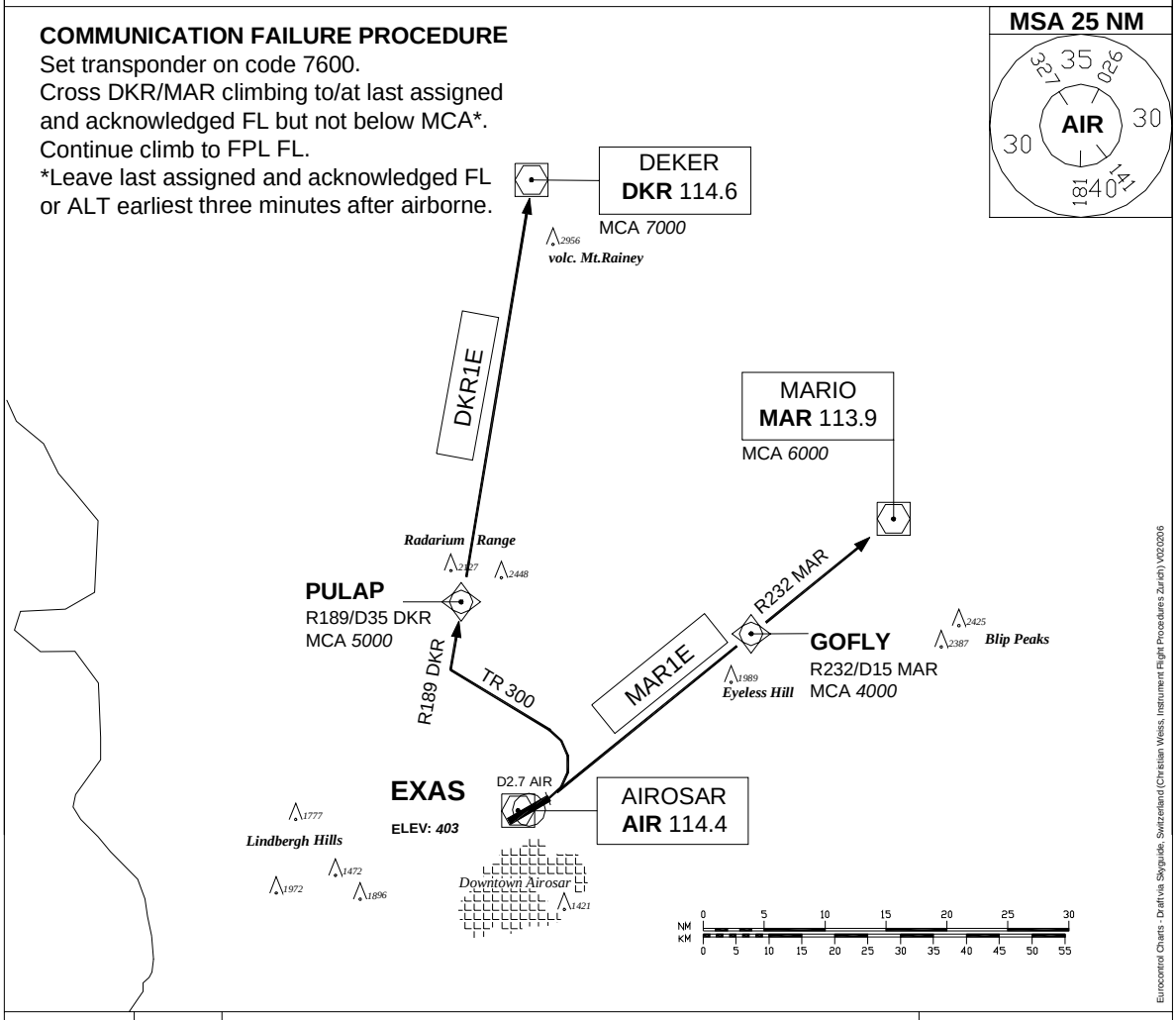
STANDARD INSTRUMENT DEPARTURE RWY 06

AIROSAR

GENERAL INFORMATION
1. SID incorporate Noise Preferential Routeings.
2. Do not climb above SID levels until instructed by ATC.
3. MAX IAS 250kt below FL100 unless otherwise authorized.
4. Transition Altitude: 6000ft.

FREQUENCIES
TWR 118.1
RADAR 119.1

COMMUNICATION FAILURE PROCEDURE
Set transponder on code 7600.
Cross DKR/MAR climbing to/at last assigned and acknowledged FL but not below MCA*.
Continue climb to FPL FL.
*Leave last assigned and acknowledged FL or ALT earliest three minutes after airborne.



SID	RWY	ROUTEING (including Noise Preferential Routeing)	ALTITUDES
DKR1E	06	PDG 5.1% TO 1600FT. Climb straight ahead. At AIR D2.7 turn left TRACK 300. Intercept R189 DKR. Proceed via PULAP to DKR.	Cross PULAP at *5000ft or above*, DKR at *7000ft or above*.
MAR1E	06	PDG 3.6% TO *1300FT*. Climb straight ahead. At AIR D2.7 turn left to intercept R232 MAR. Proceed via GOFLY to MAR.	Cross AIR D2.7 at *2000ft or above*, GOFLY at *5000ft or above*, MAR at *6000ft or above*.

AIP AIROSAR **EXAS AD 2.24.7.1-2**

SID CHART ICAO

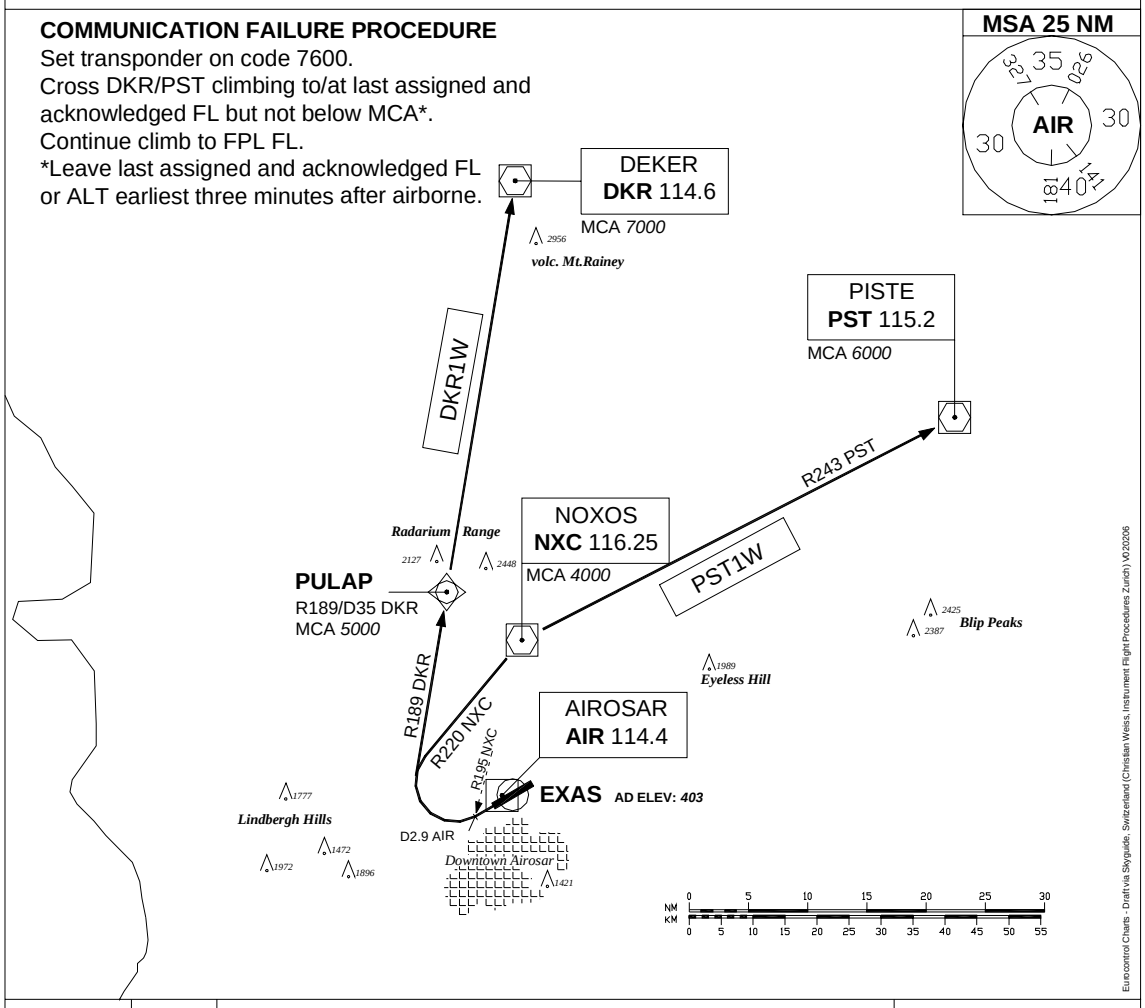
STANDARD INSTRUMENT DEPARTURE RWY 24

AIROSAR

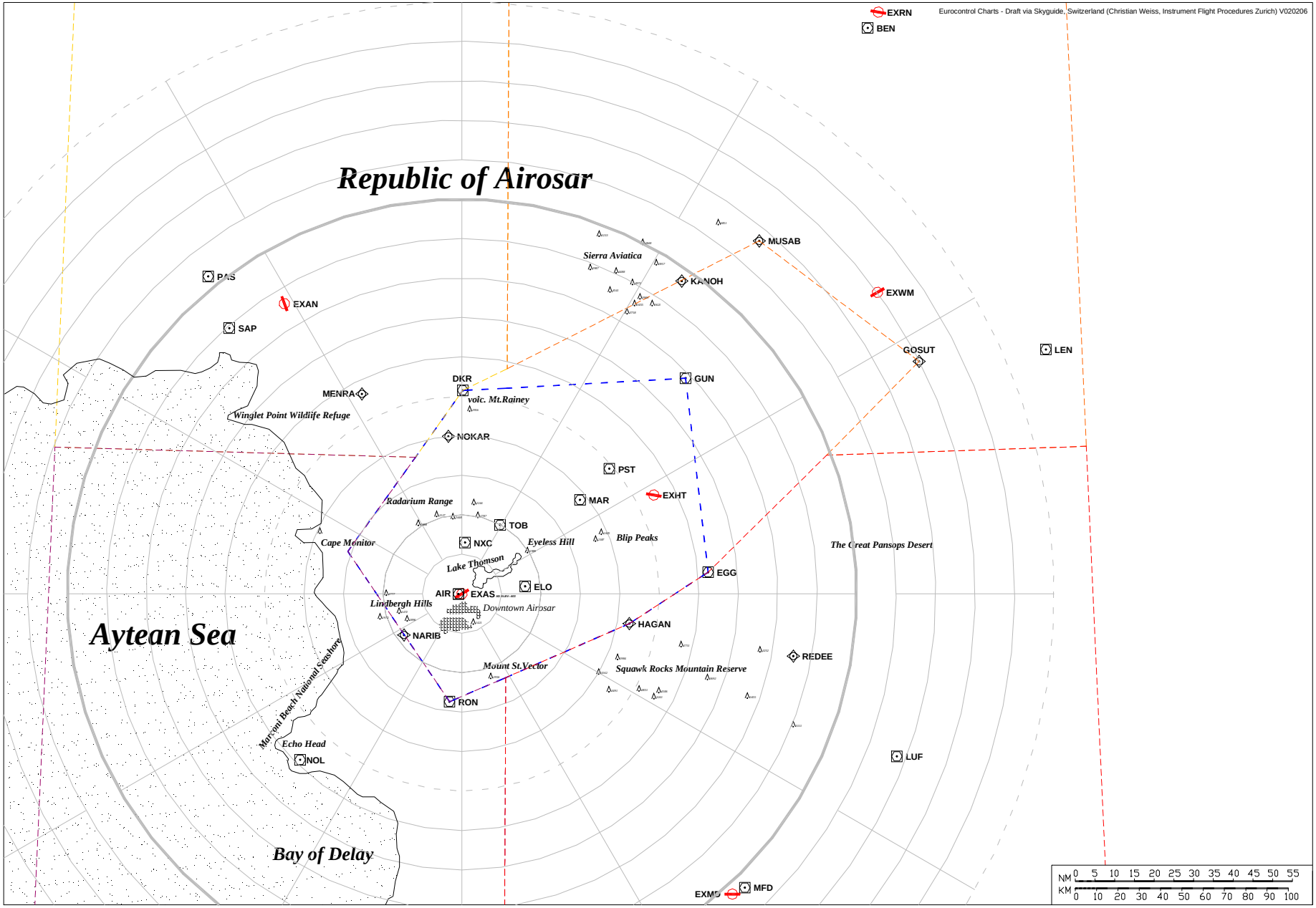
GENERAL INFORMATION
1. SID incorporate Noise Preferential Routeings.
2. Do not climb above SID levels until instructed by ATC.
3. MAX IAS 250kt below FL100 unless otherwise authorized
4. Transition Altitude: 6000ft.

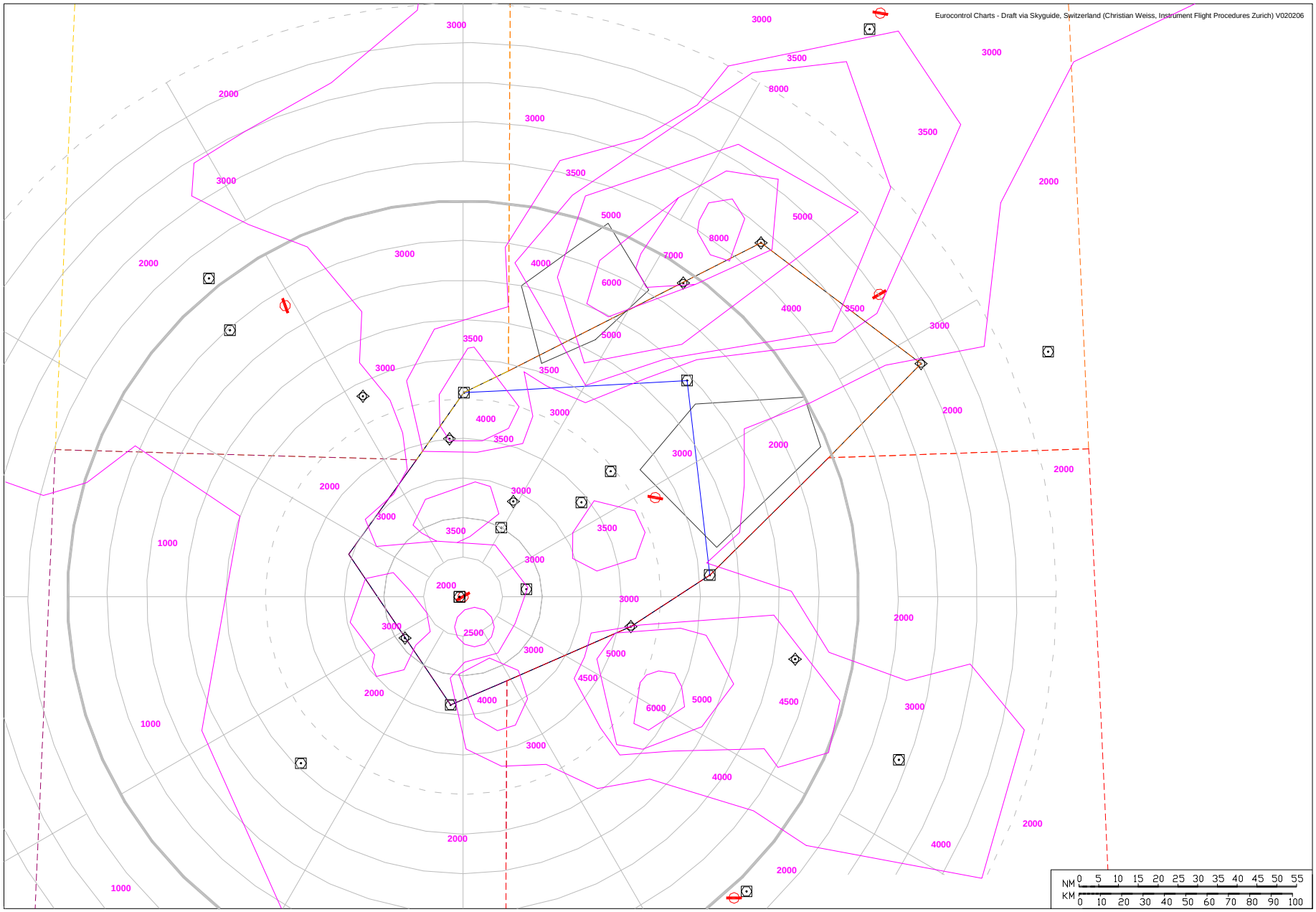
FREQUENCIES
TWR 118.1
RADAR 119.1

COMMUNICATION FAILURE PROCEDURE
Set transponder on code 7600.
Cross DKR/PST climbing to/at last assigned and acknowledged FL but not below MCA*.
Continue climb to FPL FL.
*Leave last assigned and acknowledged FL or ALT earliest three minutes after airborne.



SID	RWY	ROUTEING (including Noise Preferential Routeing)	ALTITUDES
DKR1W	24	PDG 4.2% TO 2200FT. Climb straight ahead. At AIR D2.9 (R195 NXC) turn right (MAX IAS 210kt during turn). Intercept R189 DKR. Proceed via PULAP to DKR.	Cross PULAP at *5000ft*, DKR at *7000ft*.
PST1W	24	PDG 4.2% TO 2200FT Climb straight ahead. At AIR D2.9 (R195 NXC) turn right (MAX IAS 210kt during turn). Intercept R220 NXC. Proceed via NXC to PST.	Cross NXC at *4000ft*, PST at *6000ft*.


Eurocontrol Charts - Draft via Skyguide, Switzerland (Christian Weiss, Instrument Flight Procedures Zurich) V020206
Republic of Airosar
Aytean Sea
Bay of Delay
EXRN
BEN
MUSAB
Sierra Aviatica
KANOH
EXWM
GOSUT
LEN
PAS
EXAN
SAP
DKR
GUN
MENRA
voic. Mt.Rainey
Winglet Point Wildlife Refuge
NOKAR
PST
MAR
EXHT
Radarium Range
TOB
NXC
Eyeless Hill
Blip Peaks
Cape Monitor
The Great Pansops Desert
Lake Thomson
EGG
ELO
AIR
EXAS
Downtown Airosar
Lindbergh Hills
HAGAN
NARIB
REDEE
Mount St.Vector
Squawk Rocks Mountain Reserve
RON
Marconi Beach National Seashore
Echo Head
NOL
LUF
EXMD
MFD
NM 0 5 10 15 20 25 30 35 40 45 50 55
KM 0 10 20 30 40 50 60 70 80 90 100



AIP AIROSAR

MINIMUM OBSTACLE CLEARANCE CHART

AIROSAR

EXAS AD 2.24.13-2

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APPENDIX 1: LETTER OF AGREEMENT BETWEEN AIROSAR TCL AND AIROSAR APP

1. General

1.1 Purpose

This LOA describes co-ordination and control procedures for IFR and VFR flights between Airosar TCL and Airosar APP.

1.2 Deviations

In exceptional cases, and if close co-ordination and agreement between the two parties exist, short-time deviations from these regulations are permitted for the purpose of improved traffic handling.

2. Areas of Responsibility

The areas of responsibility are displayed on the attached Airosar TMA chart.

3. Co-ordination

3.1 Data Exchange

Estimates are exchanged not later than 10 minutes before the ETO and generally transferred by means of automated data exchange (OLDI).

3.2 Arrivals

Co-ordination point and clearance limit for all arrivals to EXAS is either ELO or TOB.

3.3 Transit Flights

Transits flights through Airosar Approach airspace shall be co-ordinated on an individual basis.

4. Control Procedures

4.1 Arrivals

Arrivals to EXAS are generally released at FL100. Individual co-ordination shall be effected if arrivals shall be released at any other flight level.

4.1.1 Routing

If not otherwise co-ordinated arrivals to EXAS are cleared via the published STARs.

4.1.2 Radar Handover

Radar handovers are not necessary if the separation between succeeding arrivals is 5NM constant or increasing.

4.1.3 Transfer of Control

Transfer of control shall generally take place upon crossing the common boundary between areas of responsibility.

4.1.4 Transfer of Communications

Transfer of communications shall take place as early as possible, but not later than crossing the boundary between the areas of responsibility.

4.2 Departures

Departures from EXAS are released at FL90 unless otherwise agreed by individual co-ordination.

4.2.1 Routing

If not otherwise co-ordinated departures from EXAS are cleared via the published SIDs.

4.2.2 Radar Handover

Radar handovers are not necessary, if the separation between succeeding departures is 10NM constant or increasing.

4.2.3 Transfer of Control

Transfer of control shall generally take place upon crossing the boundary between areas of responsibility.

4.2.4 Transfer of Communications

Transfer of communications shall take place as early as possible, but not later than crossing the boundary between the areas of responsibility.

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APPENDIX 2: CO-ORDINATION PROCEDURES BETWEEN AIROSAR APPROACH AND AIROSAR TOWER

1. General

1.1 Purpose

This appendix describes co-ordination and control procedures for IFR and VFR flights between Airosar TWR and Airosar APP.

1.2 Deviations

Deviations from these regulations may be co-ordinated for the purpose of improved traffic handling.

2. Areas of Responsibility

The areas of responsibility are displayed on the attached Airosar TMA chart.

3. Co-ordination

3.1 Data Exchange

Estimates are exchanged and generally transferred by means of automated data exchange (OLDI).

3.2 Transit Flight

Transit flights through Airosar Control Zone shall be co-ordinated on an individual basis.

4. Control Procedures

4.1 Arrivals

4.1.1 Transfer of Control

Transfer of control shall take place in accordance with the procedures in ICAO Annex 11, Chapter 3.6, “Transfer of responsibility for control”.

4.1.2 Transfer of Communications

Transfer of communications to the aerodrome controller should be effected at such a point or time that clearance to land or alternate instructions can be issued to the aircraft in a timely manner.

4.2 Departures

4.2.1 Routing

If not otherwise co-ordinated departures from EXAS are cleared via the published SIDs.

4.2.2 Transfer of Control

Transfer of control shall generally take place immediately after the aircraft is airborne.

4.2.3 Transfer of Communications

Transfer of control shall generally take place immediately after the aircraft is airborne.

ANNEX C: PROCEDURES FOR MODULE 8

1. Airspace and Unit Organisation

The vertical dimensions of the Airosar FIR are from surface to FL 245. Airosar TMA is an airspace within the Airosar FIR. Airosar TCL is a sector within the Airosar TMA. There are two other sectors within the Airosar FIR, Beelan and Redee. Adlin FIR is located to the west of Airosar FIR and has two sectors, Menra and Nolan – Map 1.

Within the Airosar TMA there are three controlled airspaces, namely:

- a Control Zone surrounding the major airport, Airosar (EXAS) under the jurisdiction of Airosar Tower;
- above and around the control zone is Airosar Approach sector under the jurisdiction of Airosar Approach Control;
- above and around Airosar Approach sector is a Terminal Control Area, Airosar TCL under the jurisdiction of Airosar TCL – Map 2.

Approach Control and TCL Control are situated in the TCL operations room.

The vertical dimensions and ICAO classifications of Airosar airspace are shown in Table 9.

Table 9: Airosar Airspace

AIRSPACE	ORGANISATIONAL SECTOR	DIMENSIONS	CLASS
Airosar CTR	Airosar Tower	SFC - 1000’	D
Airosar APP	Airosar Approach	1000’ – FL 95	C
Airosar TCL	Airosar TCL	1000’ - FL 95	E
		FL 95 – FL 245	C
Airosar FIR (Below TMA)	Airosar APP/TCL	SFC - 1000’	G
Hammtown Class ‘F’	Hammtown Information	SFC - 1000	F

Note: A rectangular shaped airspace around Hammtown airport from surface to 1000 ft is designated ICAO Class ‘F’ airspace when activated - Map 2. See Appendix 2 for details of activation of this airspace.

2. General Procedures

2.1 Radar Separation

The minimum radar separation within the Airosar TCL is 5 NM.

Outbound aircraft shall be transferred by TCL sectors to en-route sectors radar separated by a minimum of 5 NM, constant or increasing.

2.2 Standard Agreement

An aircraft may enter the airspace under the jurisdiction of another sector without individual co-ordination when it is following a standard route on its own navigation and it has been cleared to, or is at, an agreed level (see 6. 'Agreed Levels') before communication is transferred to the receiving sector.

2.3 Transfer of Control

The transfer of control of traffic is effective at the TMA sector boundaries unless otherwise agreed. Transfer of communication may take place earlier.

2.4 Speed Control

Aircraft shall be transferred to Approach Control at a maximum speed of 250 KT.

2.5 Radar Identification

The radar identification methods described in ICAO Doc 4444 shall be used.

All correlated traffic from an adjacent sector may be considered as being identified.

If the transfer of radar identity is necessary it shall be completed in accordance with the procedures described in ICAO Doc 4444.

2.6 Atmospheric Pressure Setting

The transition altitude for the TMA is 6000 feet.

The minimum holding level available to Airosar TCL at ELO and TOB is FL 100.

3. Outbound Procedures

Aircraft departing from EXAS will be on a Standard Instrument Departure (SID) and climbing to FL 90 or lower requested flight level unless otherwise co-ordinated.

Aircraft departing from other airfields within the sector of responsibility are required to obtain a clearance from TCL before take-off.

All aircraft departing from airfields within the TCL sector of responsibility will observe an IAS limit of 250 KT below FL 100. TCL controllers should remove speed limitations as soon as traffic permits.

4. Inbound Procedures

4.1 Standard Arrival Routes

Aircraft inbound to EXAS will be routed via Standard Arrival Routes (STARs) as shown in Table 10.

Table 10: STARs

ROUTE	HOLDING AREA	STAR
MUSAB-GUN-PST-MAR-TOB	TOB	MARIO 1G
GOSUT-GUN-PST-MAR-ELO	ELO	MARIO 1A
REDEE-EGG-ELO	ELO	EGGIB 1A
MENRA-NOKAR-HITCH-TOB	TOB	NOKAR 1G

4.2 Releases to Approach Control

- Aircraft cleared to a holding fix shall be vertically separated and released in level order. Any level lower than FL 100 in or transiting the holding areas shall be co-ordinated with Approach Control.

- Aircraft cleared to a holding facility shall be vertically separated and not in confliction with overflying traffic before control is transferred.

- Release messages shall contain the following information in the standard sequence of:

  – holding area - release point
  – callsign - contact point
  – flight level - any qualifying instructions

5. Holding Procedures

5.1 Separation Between Holding and Overflying Aircraft

Vertical separation between overflying aircraft approaching the holding fix and aircraft already holding in the particular area is to be established before the overflying aircraft has reached the minimum distances shown in Table 11.

Table 11: Vertical Separation from Holding Fix

FLIGHT LEVEL	DISTANCE FROM HOLDING FIX
FL 150 and below	15 miles
FL 160 to FL 200	25 miles
FL 210 and above	30 miles

Aircraft established in the TOB holding area are separated from aircraft established in the ELO holding area up to and including FL 140.

Standard ICAO holding speeds apply in the TOB and ELO holding patterns.

6. Agreed Levels

The agreed levels for aircraft arriving/departing from aerodromes in the Airosar TMA are shown in Table 12.

Table 12: Agreed levels

ADJACENT SECTOR	ROUTE	COP	INBOUND LEVEL	OUTBOUND LEVEL
Menra	IN-B15	IN-NOKAR	170	
	OUT-P17	OUT-DKR		160
Beelan	R10 AND G20	GUN	240	230
Redee	P17	EGG	200	N/A
DG7	R10 & G20	GUN	250	240

7. Letter of Agreement

See Appendices 1 and 2 to Annex B.

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ANNEX D: SPECIFY WORKLOAD

To specify more accurately the workload, we use the diagram provided by the method of the IANS course on simulation creations.

This method is detailed in Section 3.

1. Workload for Module 6

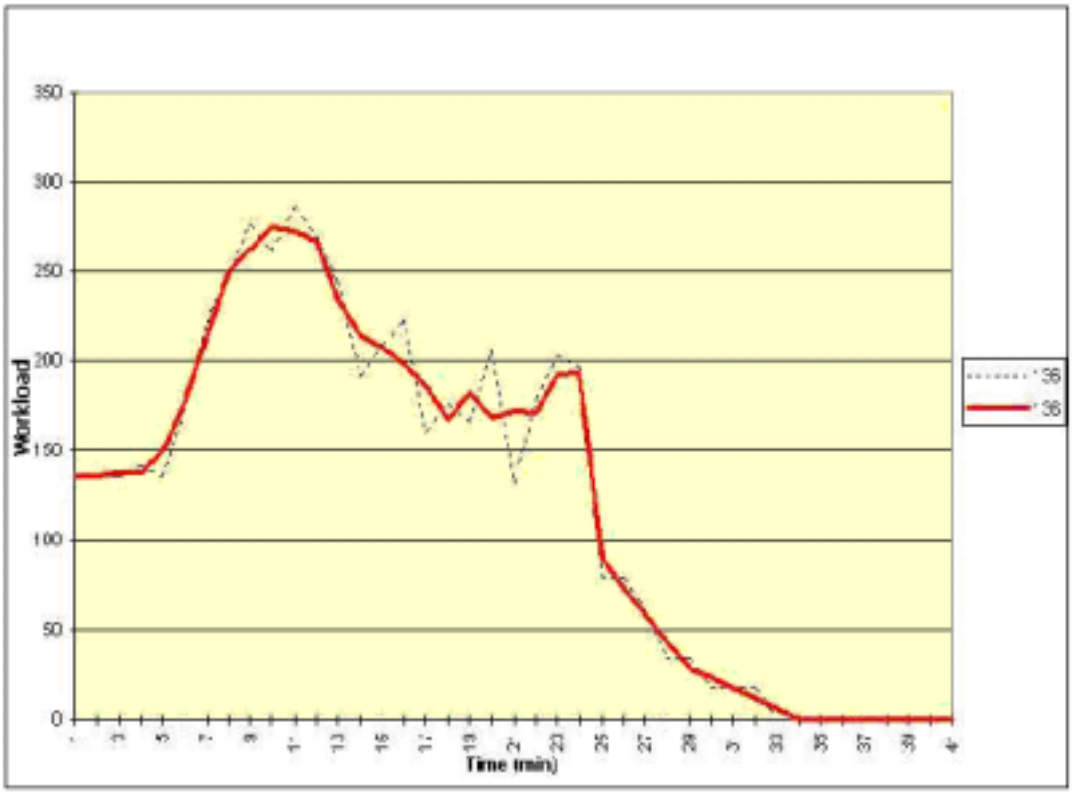

Figure 2: Exercise Workload

2. Workload for Module 8

Figure 3: Exercise Workload

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ABBREVIATIONS AND ACRONYMS

For the purposes of this document the following abbreviations and acronyms shall apply:

2-D	Two dimensional
3-D	Three dimensional
a/c	Aircraft
ACC	Area Control Centre
ACFT	Aircraft
ACN	Aircraft Classification Number
ACS	Area Control Surveillance
ADF	Automatic Direction Finding Equipment
AFIL	Air-Filed Flight Plan
AFTN	Aeronautical Fixed Telecommunications Network
AGA	Aerodromes (air routes and ground aids)
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation and Control
AIS	Aeronautical Information Services
ALT	Altitude
ANS	Air Navigation Services
APP	Approach Control (Procedural)
APS	Approach Control Surveillance
ASDA	Accelerate-Stop Distance Available
ASM	Airspace Management
ATC	Air Traffic Control

ATCO	Air Traffic Controller / Air Traffic Control Officer *(US/UK)*
ATFM	Air Traffic Flow Management
ATIS	Automatic Terminal Information Service
ATM	Air Traffic Management
ATS	Air Traffic Services
Aud	Audio Aids
AVASI	Abbreviated Visual Approach Slope Indicator
BIRDTAM	BIRD hazard noTAM
Brief	Briefing
Case	Case Study
CAT	Clear Air Turbulence
CBPE	Computer-Based Practical Exercises
CBT	Computer-Based Training
CISM	Critical Stress Incident Management
COP	Co-ordination Point
CTR	Control Zone
CWBT	Computer/Web-Based Training
CWP	Controller Work Position
Debrief	Debriefing
DEGS	Degraded Systems Capability
DG8	Drafting Group 8 *(EATCHIP, HUM, HRT, TSG, TF-CCC)*
DIS	Director(ate) Infrastructure, ATC Systems & Support *(EUROCONTROL Headquarters, SDE)*
DIS/HUM	See ‘HUM (Unit)’
DME	Distance Measuring Equipment
DVOR	Doppler VOR

EATCHIP	European Air Traffic Control Harmonisation and Integration Programme *(now EATMP)*
EATMP	European Air Traffic Management Programme *(formerly EATCHIP)*
EATs	Expected Approach Times
ECAC	European Civil Aviation Conference
EFIS	Electronic Flight Instrument System
EQPM	Equipment and systems
ESARR	EUROCONTROL Safety Regulatory Requirement
ET	Executive Task *(EATCHIP)*
EUROCONTROL	European Organisation for the Safety of Air Navigation
Ex	Exercises
Facil	Facilitation
FDPS	Flight Data Processing System
FIR	Flight Information Region
FIS	Flight Information Service
FL	Flight Level
FMS	Flight Management System
FPL	(Filed) Flight Plan
FUA	Flexible Use of Airspace
G	Group Training
GLONASS	Global Navigation Satellite System
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
GrW	Group Work
GSimul	Group Simulation

GUI	Guidelines (EATCHIP\EATMP)
HF	High Frequency
Hi Fi Sim	High-Fidelity Simulator
HO	Hands On
HRS	Human Resources Programme *(EATMP, HUM)*
HRT	Human Resources Team *(EACHIP/EATMP, HUM)*
HUM	Human Factors
HUM	Human Resources (Domain*) (EATCHIP/EATMP)*
HUM Unit	Human Factors and Manpower Unit (EUROCONTROL Headquarters, SDE, DIS; formerly know as the 'ATM Human Resources Unit'; also known as DIS/HUM)
I	Individualised Training
IANS	Institute of Air Navigation Services *(EUROCONTROL, Luxembourg)*
IAS	Indicated Air Speed
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
ILS	Instrument Landing System
Inter	Interactive Training
INTR	Introduction to the course
ISimul	Individual Simulation
ITMD	Individual Training Material Dependent
KT	Knot(s)
Lab	Laboratory (sound or multimedia)
LAW	Aviation Law
LDA	Landing Distance Available
Lec	Lecture

Les	Lesson (*training event) or* Lesson/Demonstration *(training method)*
LOA	Letter Of Agreement
MCA	Minimum Crossing Altitude
MET	Meteorology
min.	minute
MLS	Microwave Landing System
MMC	Multimedia Computer
MSA	Minimum Safe/Sector Altitude
NAV	Navigation
NAVAID	Navigation Aid
NDB	Non-Directional Beacon
Net	Network
NM	Nautical Mile(s)
NOTAM	Notice to Airmen
OJT	On-The-Job Training
OLDI	On-Line Data Interchange
OTD	Other Training Device
PAPI	Precision Approach Path Indicator
PCN	Pavement Classification Number
PENV	Professional Environment
Pre-Simul	Pre-Simulation
PSR	Primary Surveillance Radar
PST	Pacific Standard Time
PTP	Part-Task Practice
PTT	Part-Task Trainer
RAD	Radar

RCC	Rescue Co-ordination Centre
RDPS	Radar Data Processing System
RE	Real Equipment
Real	Real Time
Role	Role-Play
RPL	Repetitive Flight Plan
RPS	Radar Position Symbol
Rstd	Time-restricted Learning
RTF	Radiotelephone or Radiotelephony
RVSM	Reduced Vertical Separation Minimum
RX	Receiver
SA	Skill Acquisition
SDE	Senior Director, Principal EATMP Directorate *or, in short,* Senior Director(ate) EATMP *(EUROCONTROL Headquarters)*
SELCAL	Selective Calling System
SFC	Surface
Self	Self-paced learning
SID	Standard Instrument Departure
SIGMET	Significant Meteorological Information
Sim	Simulator
Simul	Simulation
SLP	Speed Limiting Point
SNOWTAM	NoTAM on SNOW conditions
SRC	Safety Regulation Commission *(EUROCONTROL)*
SSR	Secondary Surveillance Radar
ST	Specialist Task *(EATCHIP)*

STAR	Standard Arrival Route
StBf	Structured Briefing
STD	Standard (EATCHIP/EATMP)
StDf	Structured Debriefing
Sup Pract	Supervised Practices
TA	Transition Altitude
TACAN	UHF Tactical Air Navigation Aid
TCAS	Transponder Collision Avoidance System
TCL	Terminal Control
TDH Unit	Training Development and Harmonisation Unit *(EUROCONTROL, IANS)*
TEAM SIMUL	Team Simulation
TF-CCC	Task Force Common Core Content *(EATCHIP, HUM, HRT, TSG)*
TMA	Terminal Area
TODA	Take-Off Distance Available
TORA	Take-Off Run Available
TRL	Transition Level
TRM	Team Resource Management
TSG	Training Sub-Group *(EATCHIP/EATMP, HUM, HRT)*
TSimul	Team Simulation
TSP	Training Sub-Programme *(EATMP, HUM, HRS)*
Tut	Tutoring
TWR	Tower
TX	Transmitter
Txt	Text
UAC	Upper Area Control Centre

UDF	UHF Direction Finding Station
UHF	Ultra High Frequency
UNIN	Unusual/Emergency Situations
VASI	Visual Approach Slope Indicator
VC	Virtual Classroom
VDF	VHF Direction Finding Station
VFR	Visual Flight Rules
VHF	Very High Frequency
Vid	Video
VIP	Very Important Person
Vis	Visit
VOLMET	Meteorological Information for Aircraft in Flight
VOR	VHF Omnidirectional Radio Range
Vsl	Visual Aids

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