EUROCONTROL

ATC Refresher Training Manual

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DOCUMENT CHANGE RECORD

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

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0.01	29/07/2013	First Draft	All
0.02	28/03/2014	Inclusion of review comments	All
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TABLE OF CONTENTS

EXECUTIVE SUMMARY

This manual provides guidance for the development of ATC Refresher training courses. It promotes the maintaining and enhancing of air traffic controller performance by focusing the training on the competencies needed to perform their duties safely and efficiently. The training makes use of various scenarios that expose the controller to the most relevant threats and errors in their environment.

This manual has also been written taking into account the development of EU regulatory requirements that have been produced by EASA for the refresher training of air traffic controllers and therefore may be used as guidance for implementation of these provisions[1].

There are four main parts to this manual:

Part 1 ATC Competencies - deals with the role of competencies in refresher training and uses the ICAO ATC Competency Framework as its basis.

Part 2 ATC Refresher Training Baseline - provides a set of baseline topics and scenarios that may be used during refresher training. The baseline includes the training objectives, desired outcomes and links with competency for each scenario. This part further details training development and design considerations when establishing refresher training that is built on the ATC Refresher Training Baseline.

Part 3 Unit-specific ATC Refresher Training - this part recognises that unit-specific refresher training has the greatest potential for enhancing ATC performance because it makes use of operational specific data to optimise the baseline training scenarios and target topics and scenarios that are of particular interest for the unit concerned. It includes sections on where to collect the unit-specific data and how to analyse it so that appropriate topics and scenarios can be developed for refresher training.

Part 4 Instructors - recognises that the role of the instructor in refresher training is different to that of initial training or OJT and suggests a method of instructing, that combines some elements of classic instructional techniques with individual facilitation.

1 COMMISSION REGULATION (EU) 2015 of 20 February 2015 laying down the technical requirements and administrative procedures relating to air traffic controllers' licences and certificates

1. INTRODUCTION

This manual provides guidance for the development of ATC Refresher training courses. It promotes the maintaining and enhancing of air traffic controller performance by focusing the training on the competencies needed to perform their duties safely and efficiently. The training makes use of various scenarios that expose the controller to the most relevant threats and errors in their environment. These scenarios are based on evidence collected from the operational environment and training activities.

Use of this guidance material will enable service providers to develop effective refresher training courses and improve operational safety.

Service providers may either build their own refresher training courses based on the methodology described for unit-specific refresher training and based exclusively on the identification of threats and errors in their own environment, or they may make use of the "off-the-shelf" baseline refresher training matrix described in this manual. It is also possible to develop a course based on a combination of both the baseline and the unit-specific refresher training.

This manual supports the notion that refresher training is an opportunity for controllers' to analyse their own performance, with a view to enhancing their competencies. Consequently the emphasis is placed on learning through detailed analysis of practical scenarios.

In recognition of the importance of the instructor role during the refresher training course, this manual provides additional guidance on the expertise needed for delivering this training and analysing performance against the competencies.

1.1 Background

There is a lot of guidance material available for many areas of ATCO training (e.g. initial training, OJTI training) but very little in the way of guidance for the implementation of refresher training. Very little has been said or written about the significant role that refresher training can play in enhancing controller performance and addressing safety priorities within organisations.

All too often, refresher training has been structured so that air traffic controllers get an opportunity to revise the theory behind a particular unusual or emergency situation and possibly then have the opportunity to practice dealing with the event in a simulated environment. Frequently the ability to deal with the event is measured against a fixed checklist of actions. Although checklists can be a very effective aid to the controller in managing non-routine situations, they are not an effective way to ensure that the controller has the required "technical" and "non-technical" competencies to manage the overall event. In fact, in many refresher courses, it is not clear which competencies are being trained for and there is no evaluation of whether those competencies are achieved. (Note: - in this context, evaluation is not meant as a pass/fail assessment for regulatory requirements, but rather an evaluation conducted for the purposes of maintaining and/or improving performance.)

The concept proposed in this manual is to use both routine and non-routine scenarios as the vehicle for developing air traffic controller performance across a range of competencies. This type of refresher training aims at enhancing the air traffic controller's mental preparedness for managing both known and unforeseen threats and errors. In addition, the manual promotes refresher training as an opportunity for air traffic controllers to focus on and analyse their actions with the aim of enhancing their performance.

1.2 Regulatory Context

Refresher training has been a part of air traffic controller training for many years. It was made mandatory in European legislation in 2006 and in the recent update of the air traffic controller licencing rules[2], refresher training requirements have been further detailed.

According to the requirements, refresher training should be delivered as an approved course and is a component of continuation training. As such, it forms part of the Unit Competence Scheme (UCS) that is approved by the competent authority. The refresher training topics should be examined or assessed using the processes described in the unit competence scheme.[3]

2 COMMISSION REGULATION (EU) 2015 of 20 February 2015 laying down the technical requirements and administrative procedures relating to air traffic controllers' licences and certificates

3 AMC1 ATCO.D.080

Service providers will be required to include in their UCS, the process they are using to "*identify topics, sub-topics, objectives and training methods for continuation training*[4]". This manual provides a way in which these various elements can be identified and what methods may be used for providing the training.

The regulation further requires that the frequency and minimum duration[5] of refresher training be determined and form part of the UCS. Clearly the realisation of this requirement will be dependent on the scale and complexity of the operational environment, the identified training needs and the mandatory elements of the refresher training as defined in the regulation (see below). Nonetheless, this manual provides guidance and examples of the structure and organisation of refresher training courses that may be used as a basis for determining the frequency and duration of refresher training in a specific unit.

Mandatory elements of refresher training

The refresher training shall contain, at least:

(1) Standard practices and procedures, using approved phraseology and effective communication;
(2) Abnormal and emergency situations training, using approved phraseology and effective communication; and
(3) Human factors training.

Further to the above, a syllabus is to be developed for the refresher training and where the skills of the controller are to be refreshed; performance objectives are to be developed[6].

This manual, and particularly the part containing the ATC Refresher Training Baseline, may be used to develop the syllabus and performance objectives for the mandatory elements of refresher training.

One of the important elements of the refresher training requirements is the specific inclusion of effective communication and approved phraseology. The guidance material[7] for these requirements highlights the fact that communication misunderstandings are present in most air traffic occurrences and that consistent use of approved phraseology should mitigate these occurrences. To this end, training objectives dealing with phraseology and effective communication should be designed into refresher training. These objectives should be included in all training relating to standard practices and procedures and the handling of abnormal and emergency situations.

The refresher training dealing with human factors should include team resource management, fatigue and stress management[8]. This training may be a combination of practical and knowledge-based training e.g. case studies.

4 ATCO.B.025 (a) (7)
5 ATCO.B.025 (a) (8)
6 ATCO.D.080 (c)
7 GM1 ATCO.D.080 (b) (1) (2)
8 AMC1 ATCO.D.080 (b) (3)

2. DEFINITIONS

Abnormal situation	Circumstances which are neither routinely nor commonly experienced and for which an air traffic controller has not developed automatic skills, including degraded systems. Source: EASA
Competency	A combination of skills, knowledge and attitudes required to perform a task to the prescribed standard. Source: ICAO PANS-TRG
Competency Unit	A discrete function consisting of a number of competency elements. Source: ICAO PANS-TRG
Competency Element	An action that constitutes a task that has a triggering event and a terminating event that clearly defines its limits and an observable outcome. Source: ICAO PANS-TRG
Emergency situation	A serious, unexpected and dangerous situation requiring immediate actions. Source: EASA
Error	An action or inaction by an operational person that leads to deviations from organisational or the operational person's intentions or expectations. Source: ICAO PANS-TRG
Performance Criteria	Simple, evaluative statements on the required outcome of the competency element and a description of the criteria used to judge whether the required level of performance has been achieved. Source: ICAO PANS-TRG
Threat	Events or errors that occur beyond the influence of an operational person, increase operational complexity and must be managed to maintain the margin of safety. Source: ICAO PANS-TRG

3. WHAT IS ATC REFRESHER TRAINING?

Refresher training is designed to review, reinforce or enhance the existing knowledge and skills of air traffic controllers to provide a safe, orderly and expeditious flow of air traffic and shall contain at least:

(1) Standard practices and procedures, using approved phraseology and effective communication;
(2) Abnormal and emergency situations training, using approved phraseology and effective communication; and
(3) Human factors training.

The description of refresher training makes clear that it is designed to ensure that already competent air traffic controllers not only maintain their competence, but also enhance their performance in a wide variety of situations. Furthermore, as the ATM world enters an era of rapidly changing technology, procedures, new ATM systems and new aircraft with new functionalities; refresher training can be one of the important ways in which air traffic controllers are given the opportunity to review their performance in light of such changes.

Refresher training includes abnormal situations which, according to the definition includes circumstances which are neither routinely nor commonly experienced and for which an air traffic controller has not developed automatic skills and, more importantly, now also includes degraded systems training.

The maintenance of existing knowledge and skills is also a fundamental part of refresher training that should not be forgotten. This maintenance of knowledge and skills could relate to seasonally dependent traffic flows and procedures, and seldom used procedures.

Often, refresher training has been designed without precise learning outcomes, the rationale being that abnormal and emergency situations cannot have defined outcomes since each situation will be different. Whilst the outcome of an event may not be definable, the competencies required to manage these events are.

Refresher training has often been simply an opportunity to give air traffic controllers some exposure (usually through practical training, case studies or theory) to various situations that they are not likely to experience on a regular basis. Whilst exposure to these situations has some benefits, there can be significantly more benefit if the training is designed with the aim of analysing and enhancing performance.

For designers of refresher training, there are a wide variety of elements and issues that need to be taken into account if they strive to develop training that will enable real learning and improved performance to take place. The following figure provides an overview of the context within which refresher training often needs to be designed:

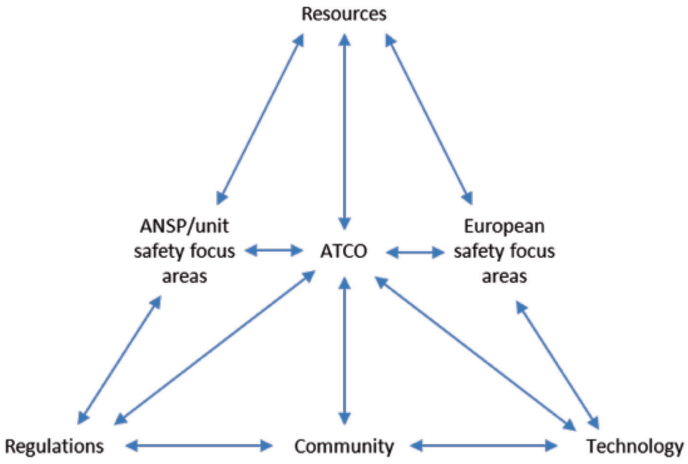


Figure 1: Refresher training interactions

Very often Refresher training is designed taking into account only two elements; the regulations and the resources. Whilst it is clear how this situation arises, a refresher training course that is designed to take into account all the interacting elements and is based on the competencies required by air traffic controllers, will lead to a more effective use of training time and improve overall performance.

4. ATC REFRESHER TRAINING CONCEPT

The purpose of the Refresher Training Concept is to maintain and more importantly, enhance the performance of air traffic controllers by focussing the training on the competencies needed to do the job well. The training is conducted making use of various scenarios that expose the controller to the most relevant threats and errors in their environment.

The ATC Refresher Training Concept contains four interrelated elements that are represented in the figure below:

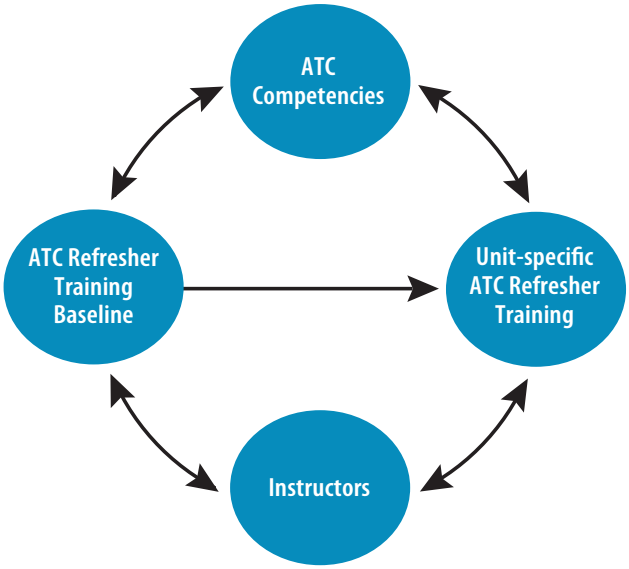


Figure 2: ATC Refresher Training Concept

4.1 ATC Competencies

The first component of the ATC Refresher Training Concept is a set of air traffic controller competencies that are detailed in PART 1 of this document. This set of competencies is a complete framework that includes competency units, competency elements and performance criteria (observable behaviours). It includes, at a generic level, both the technical and non-technical knowledge, skills and attitudes that are needed to provide safe and efficient air traffic services.

The ATC Competency Framework[9] in this document was developed by ICAO. It has been used as the basis for mapping competencies onto the ATC Refresher Training baseline.

Note: *This document has been made available prior to the official publication of the ICAO PANS-TRG edition that will contain the ATC Competency Framework (applicability date of this the revised edition foreseen for November 2016). In the unlikely event of the published Competency Framework differing significantly from what is in this manual, the manual will be updated to reflect the change.*

Air navigation service providers may use the ICAO Competency Framework in this document, or their existing competency framework or develop their own framework, which should list the performance criteria that meet their specific needs and include a comprehensive set of technical and non-technical competencies. A unit-specific competency framework supports the operations room and is the basis of the refresher training. Unit-specific refresher training courses can also be used to provide feedback into the unit training.

4.2 ATC Refresher Training Baseline

The ATC Refresher Training Baseline is detailed in PART 2 of this document. In broad terms, it consists of a series of critical training topics, which are supported by training scenarios and a list of performance criteria which are linked to the competency framework.

The Baseline may be used to plan an ATC Refresher Training Course and develop the training material that will be necessary to implement the course. As part of their approved unit competence scheme, service providers will still need to determine the number of scenarios they will use, the frequency and duration of the training and the blend of theoretical and practical elements.

The baseline training topics are derived from data received from various sources including:

- Safety Improvements Sub-group (SISG) list of safety priorities
- EVAIR database
- EUROCONTROL refresher training material

To ensure that the refresher training topics detailed in the baseline course remain relevant, there is a need to routinely review and update the list of topics and scenarios. This review process is linked to the activities of the EUROCONTROL SISG and an analysis of the potential threats and errors in terms of their likelihood, severity and the benefit of training to address these issues.

9 ICAO Doc 9868 PANS-Training

4.3 Unit-specific ATC Refresher Training

The method to develop Unit-specific ATC Refresher Training is described in PART 3 of this document. Unit-specific refresher training has the greatest potential for enhancing ATC performance because it makes use of operational specific data to optimise the baseline training scenarios and target topics that evidence confirms is of interest for the unit concerned.

A unit-specific course should typically result in improved effectiveness of the training, however it does need a large enough amount of unit-specific data to analyse. The purpose of the data collection and analysis is to provide the source from which the adjustments to the training course can be made with the confidence that the result will be an enhancement when compared with the baseline course.

The unit-specific training course is linked to the same competency framework that is used in the baseline; nonetheless, data analysis may highlight the criticality of certain competencies within a specific operation, which may lead to a focus on specific areas. The training course may then utilise scenarios that are relevant to the unit and addressing the focus areas.

4.4 Instructors

The role of the instructor providing refresher training is to help air traffic controllers to maintain, and in some situations, enhance their knowledge, skills and attitudes so that they are able to do their job safely and competently.

The nature of practical refresher training is such that, in many instances, the instructor may be no more skilled than their "trainee" in dealing with various scenarios. So it is not a learning environment where the instructor is 'teaching' or transferring knowledge and skills. Rather, refresher training is an opportunity for the instructor, through guided analysis, to enable a fellow controller to evaluate for themselves what is most appropriate and effective. The instructor guides the controller through the practice, analysis and enhancement of their performance, taking into account the individual's experience, the set of circumstances encountered and the context within which the training scenario takes place.

Instructors should be able to demonstrate effective performance in all competencies where they will be providing instruction. In addition, these instructors should be provided with preparatory training themselves to ensure that they understand the competency-based approach to the training course and are able to use guided analysis as part of their instructing technique.

PART 4 of this document provides more details on the expertise useful for instructors providing refresher training.

5. DEVELOPING REFRESHER TRAINING

The minimum requirements considered necessary to implement a refresher training course according to the concept described in this manual are as follows:

a. A competency framework, which includes a list of observable behaviours
b. A matrix of relevant topics and scenarios
c. The ability to develop training events based on scenarios
d. Instructors with the expertise to use guided analysis
e. Air traffic controllers who have been briefed on the principles and methodology used for the refresher training

A refresher training course may be developed using many different combinations of the elements provided in the manual. The course may make use of parts of this manual and combine it with elements that have already been established within the unit.

The following are just some examples of the possible combinations of elements that may be used to develop the refresher training course.

Example 1: Baseline Course

The most basic development would:

i. make use of the Competency Framework defined in Part 1,
ii. make use of the training topics and scenarios that are detailed in the ATC Refresher Training Baseline in Part 2,
iii. develop the training events based on the scenarios that were chosen in Part 2,
iv. prepare the instructors according to the information in Part 4.

Example 2: Modified Baseline Course

This development would:

i. make use of the Competency Framework that is already established in the unit/service provider,
ii. make use of the training topics and scenarios that are detailed in the ATC Refresher Training Baseline in Part 2,
iii. develop the training events based on the scenarios that were chosen in Part 2,
iv. recognise that instructors already have the expertise to instruct in guided analysis environment.

Example 3: Unit-specific Course

This development would:

i. make use of the Competency Framework that is already established in the unit/service provider,
ii. make use of the training topics and scenarios that are identified by the unit as a result of a data gathering and analysis process,
iii. develop the training events based on the scenarios identified for the unit,
iv. prepare the instructors according to the information in Part 4.

6. IMPLEMENTING REFRESHER TRAINING

It may be necessary to introduce the new refresher training course through a staged implementation that is accomplished following transitional steps:

a. Training according to competency principles

The existing course remains unchanged but for the practical aspects of the training, performance is analysed and evaluated against the competencies and associated performance criteria. For this step to be effective, instructors should be able to use guided analysis techniques.

b. Mixed training

Some training events in the course are modified according to competency training principles and used as "pilot" events to both test and familiarise personnel with the new concept.

c. Stepped implementation

In the first step, a Baseline Refresher Training Course is implemented for a certain period of time. This enables all personnel to become familiar with the competencies approach. Later, when some experience has been gained and there is confidence and understanding of the benefits of this approach, a second step can be made to convert to a Unit-Specific Refresher Course.

In all instances, the development and implementation of a new refresher training course should be conducted in close consultation with the competent authority.

7. THE REFRESHER TRAINING CYCLE

The regulatory requirement states that refresher training should be delivered as a course[10] and that the minimum duration and frequency should be defined. The way in which the refresher training course is structured and conducted must align with these two requirements. Although not explicitly linked, there may be organisational reasons and practical benefits to aligning the frequency of refresher training with the frequency of unit competence assessments.

There are a number of ways that the course could be structured. The first, and simplest, is to structure fixed-duration refresher training courses at a predetermined frequency. Each time a course is conducted, the syllabus and training material will need to be determined. In this case, each course will need to contain all three mandatory elements of refresher training; standard practices and procedures (SPP), abnormal and emergency situations (AES) and human factors (HF) training.

Example 1: All subjects every year

A unit decides that their refresher training will be conducted once/year and it will have a duration of five days. The training developer decides each year what the content of the refresher training course will be and ensures that all three mandatory elements of the refresher training are included.

The timeline will look something like this:

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Refresher Course 1	Refresher Course 2	Refresher Course 3	Refresher Course 4	Refresher Course 5	Refresher Course 6
SPP	SPP	SPP	SPP	SPP	SPP
AES	AES	AES	AES	AES	AES
HF	HF	HF	HF	HF	HF
5 days	5 days	5 days	5 days	5 days	5 days

An alternative way to structure a refresher training course is to determine that the refresher training course has a fixed-duration and a predetermined frequency, however the course will be delivered in a number of segments (usually one segment/year). In this instance, the course will still need to contain all three mandatory elements of refresher training; however they are not necessarily all delivered in the same segment.

[10] Regulation (EC) No 216 Annex Vb (f) (i)

Example 2a: One subject each year

A unit decides that their refresher training course will be conducted every three years and it will have a duration of 15 days. The course is divided up into three segments of five days each. One segment is delivered per year. The training developer decides the content of the entire course and which content will fit into which segment. During year one, standard practices and procedures are covered, in year two emergency and abnormal situations are covered and in year three human factors are covered.

The timeline will look something like this:

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Refresher Course 1			Refresher Course 2		
SPP	AES	HF	SPP	AES	HF
5 days	5 days	5 days	5 days	5 days	5 days

Example 2b: Mixed subjects each year

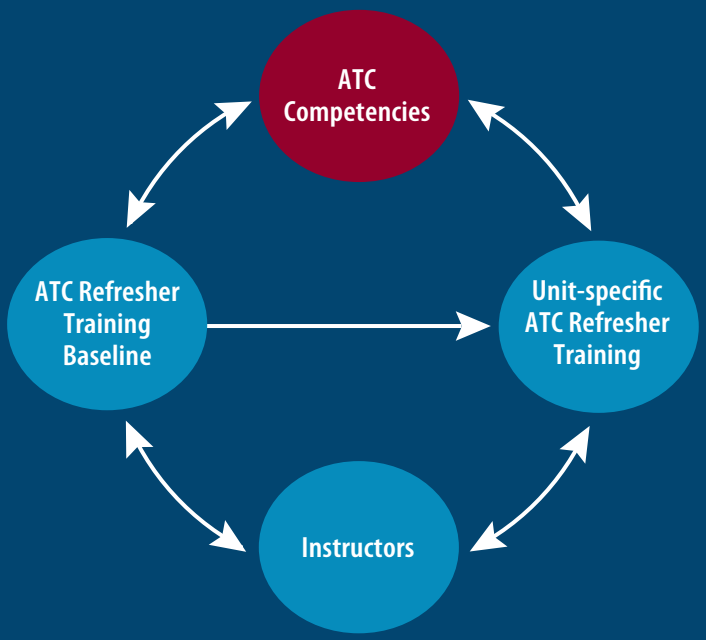
As a second possibly the training developer could ensure, over the three year period that all mandatory elements are covered, with some segments containing two or more of these elements.

The timeline could then look something like this:

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Refresher Course 1			Refresher Course 2		
SPP	AES	HF	SPP	AES	HF
AES	HF	SPP	HF	3 days	SPP
3 days	4 days	AES	6 days		6 days
		8 days			

PART 1

ATC COMPETENCIES



1. ICAO COMPETENCY FRAMEWORK

The competency framework presented in this document is a generic model of air traffic controller competencies and therefore can apply to all phases of training and ATC ratings once it has been adapted to the operating environment of the air navigation service provider.

The competency framework consists of competency units, competency elements and performance criteria (or observable behaviours) that are used as the basis for developing air traffic controller training courses.

In Appendix 1of this document, the competency framework will be detailed as a whole. Since the generic framework can be used in all phases of training, it follows that there would be adaptations of the use of the model depending on whether the training course is for initial, unit or continuation training. Later, in the part of this document that deals with the ATC Refresher Training Baseline, this competency framework will be applied to the topics and scenarios that are used for analysing air traffic controller performance.

2. LIST OF ATC COMPETENCIES

The competencies and definitions contained within the ICAO ATC Competency Framework are listed below. Appendix 1 of this document contains the detailed list of competency units associated with their competency elements and performance criteria.

No.	Competency Unit	Definition
1	Situational Awareness (SITU)	Comprehend the current operational situation and anticipate future events
2	Traffic and Capacity Management (TRAF)	Ensure a safe, orderly and efficient traffic flow and provide essential information on environment and potentially hazardous situations
3	Separation and Conflict Resolution (SEPC)	Manage potential traffic conflicts and maintain separation
4	Communication (COMM)	Communicate effectively in all operational situations
5	Coordination (CORD)	Manage coordination between operational positions and with other affected stakeholders
6	Management of Non-routine Situations (NONR)	Detect and respond to emergency and unusual situations related to aircraft operations and manage degraded modes of ATS operation
7	Problem Solving and Decision-making (PROB)	Find and implement solutions for identified hazards and associated risks
8	Self-Management and Continuous Development (SELF)	Demonstrate personal attributes that improve performance and maintain an active involvement in self- learning and self-development
9	Workload Management (WORK)	Use available resources to prioritize and perform tasks in an efficient and timely manner
10	Teamwork (TEAM)	Operate as a team member

3. USE OF COMPETENCIES IN REFRESHER TRAINING

Refresher training is a process that is used to ensure that air traffic controllers continue to maintain the level of competence required to do their job and, in addition, to present valuable opportunities for continuous improvement that is beyond the defined minimum standard of performance.

The management of abnormal or emergency situations has always been a fundamental part of refresher training and has often formed the basis of the any refresher training evaluations or assessments. So, if for example, the air traffic controller was doing practical refresher training on how to manage an aircraft that was experiencing critical fuel problems (i.e. running out of fuel), the checklist may look something like this:

- Keep ACFT high (save fuel)
- Avoid ATC-caused GO AROUND
- Inform landing aerodrome
- Ask if dangerous goods on board
- Ask for number of Persons On Board (POB)
- Clear RWY according to local instructions
- Towing equipment on standby as appropriate[11]

The evaluation might be measured against the checklist of actions – did the controller keep the aircraft high? Did the controller inform the landing aerodrome? Did the controller ask for POB? Did the controller ask if there were dangerous goods on board? And provided the evaluator could check off these actions, then the controller would be deemed competent to manage critical fuel problems.

Whilst checklists are very useful tools for aiding the controller in managing an abnormal or emergency situation, they are not necessarily effective as the measure to use when evaluating achievement/maintenance of competence since they only relate to a series of actions, or possible actions. Management of these situations take place in a variety of contexts which have an influence on the performance of the controller, they many include for example a complex traffic situation, poor quality of communications, absence of supervisors or personnel able to assist or degraded functionality of some equipment.

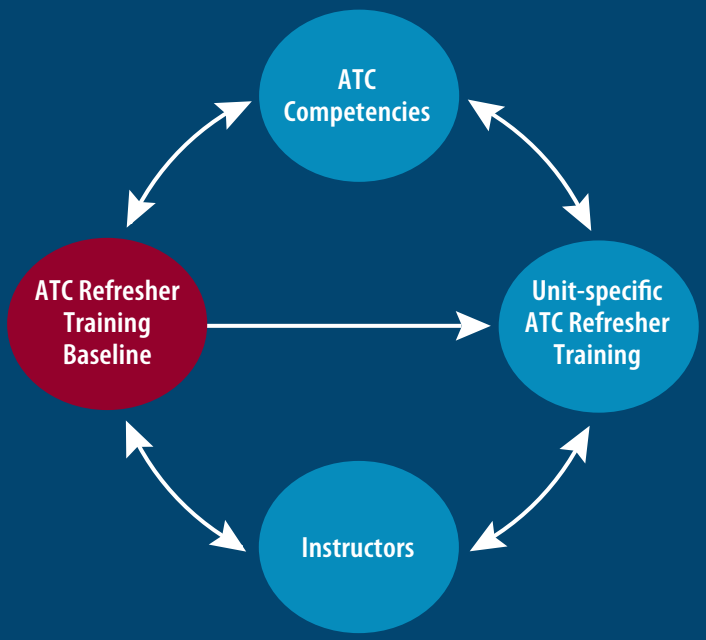
Evaluating performance against a checklist of actions specific to a particular event (fuel criticality in our example) will not enable the controller or the instructor to consider the total performance across the range of competencies. So using our fuel criticality example again, a checklist assessment would not be able to evaluate if the controller maintained situational awareness whilst dealing with the emergency, or if their decision-making was effective given the overall situation and not only for the emergency. It would not be able to evaluate if the communication was managed effectively, it would only measure if it was done, if the controller displayed a supportive attitude towards the flight crew or demonstrated that they had considered a number of "what if …" possibilities, if the overall co-ordination of the emergency and other traffic was performed effectively or if the controller asked for support at any time (if appropriate).

One of the main premises of this refresher training concept is that performance should be trained and determined against a set of competencies and not simply by the achievement or completion of a series of actions.

[11] Guidelines for Controller Training in the Handling of Unusual/Emergency Situations. Ed. 2.0

PART 2

ATC REFRESHER TRAINING BASELINE



1. ATC REFRESHER TRAINING BASELINE

The baseline is used as a reference for the development of an ATC Refresher Training Course. The emphasis of this Part is on the practically-based part of the training, although it may be desirable and sometimes necessary, for training developers to include training events such as case studies, online theory modules and briefings as part of the training.

The ATC Refresher Training baseline is contained in Appendix 2.

Note: *An updated and downloadable ATC Refresher Training Baseline spreadsheet is maintained on the EUROCONTROL Training Zone - Training Publications.*

To ensure completeness of this manual, Annex 1 contains a hardcopy of the baseline information; however please note that only the online version of the ATC Refresher Training baseline will be regularly maintained.

The baseline contains refresher training topics that relate to issues that may occur during 'normal' operations and/or during abnormal and emergency situations. These topics may deal with a very specific threat or error or be a general area of focus.

Each topic is described and then further elaborated into a series of scenarios that are directly related to the topic. Scenarios are described generically so that service providers can easily develop their training around the scenario. To aid the development of the training syllabus, training objectives for the scenario are detailed. The baseline indicates which scenarios are relevant to which ATC rating/s.

For each scenario a list of desired outcomes is defined. These outcomes are then mapped across to the most relevant ATC competency units. In some instances the desired outcome may correspond directly to a performance criteria found in the ATC Competencies list, but in most instances, the desired outcome has been specifically described for that scenario. It is important to note that the desired outcomes are frequently linked with more than one competency unit; this is because the desired outcomes are not intended to be seen exclusively as an action checklist.

2. DEVELOPING THE TRAINING USING THE BASELINE

There are a number of documents already published on how, in general terms, to develop ATC training, so this section does not deal with general training development processes but rather focusses on how to use the baseline to design the refresher training events.

It covers:

- how to select and combine the various topics and scenarios to make up a training event
- how to develop a syllabus
- how to sequence the training events
- how to develop the practical exercises and include human factors items
- how to approach the evaluation or analysis

2.1 Selecting topics and scenarios for a training event

The topics and scenarios described in the baseline intentionally make no references to the duration of the training for that topic/scenario. This is determined by the service provider and is based on the needs of the unit, the individuals undergoing the training and the way in which the training designer combines the scenarios.

The topics and scenarios are used in any number of different combinations to build practical exercises. Exercises may be dedicated exclusively to one topic or even one scenario if this is considered necessary or useful for a particular unit. Alternatively, an exercise may be concentrated on one or two specific scenarios contained within a topic but also include a scenario from one of the topics that are of a general focus nature (e.g. communication issues topic). Another possibility is to build exercises using a combination of scenarios from completely unrelated topics. See the examples in Appendix 3 for various ways to combine topics and scenarios.

The topics and scenarios that are selected for refresher training should be based on an annual (or on-going) analysis of the issues or safety challenges that the service providers ATS units are confronted with. Information from the following sources is useful for the conduct of this analysis:

- Results of incident/accident investigations
- Statistics on seasonal variations in airspace and traffic
- European network safety priorities[12]

Although priority should be given to those topics/scenarios that evidence confirms as most relevant, all other (applicable) scenarios may be covered, at possibly a lesser frequency, so as to minimise competency decline over time.

Ultimately, it is the results of the analysis that will guide how many topics/scenarios are selected to be trained, and how often and how long the refresher training will be.

2.2 Developing the syllabus

The European regulations require that a syllabus be developed for refresher training. A syllabus for the practical parts of the training can easily be developed from a combination of the information contained in the competence framework and the topics and scenarios that have been chosen from the baseline. One of the key elements of this refresher training concept is that enhancement of overall performance is being trained using specific scenarios. So this syllabus needs to take into account both aspects; overall competence and specific desired outcomes.

In keeping with the format for the EUROCONTROL Common Core Content (CCC) syllabus structure, a refresher training syllabus should contain at least a subject, topic/s, sub-topic/s and training objective/s.

The training objectives for the overall competence elements are listed in Figure 3 below.

Training objectives for the overall competence elements are included in all practical training exercises. These training objectives are grouped in a topic on 'Air Traffic Management' and a sub-topic on 'General Air Traffic Management'. When designing the syllabus, these general objectives are included for all competency elements that are marked with an "x" in the baseline scenario.

[12] Link to SKYbrary Top 5 List - http://www.skybrary.aero/bookshelf/books/2072.pdf

The full list of training objectives is detailed below:

1	Air Traffic Management
1.1	General Air Traffic Management
1.1.1	Maintain situational awareness
1.1.2	Ensure a safe, orderly and expeditious traffic flow
1.1.3	Manage potential traffic conflicts
1.1.4	Maintain separation
1.1.5	Communicate effectively
1.1.6	Coordinate effectively
1.1.7	Provide information to flight crew
1.1.8	Manage abnormal situations
1.1.9	Manage emergency situations
1.1.10	Implement solutions for any identified hazards and associated risks
1.1.11	Demonstrate personal attributes that improve performance
1.1.12	Manage workload

Figure 3: Overall Competence objectives

The training objectives for the specific scenario may be included in either a separate topic or be an additional sub-topic for the 'Air Traffic Management' topic. The baseline contains training objectives for each scenario; however service providers may wish to include additional training objectives to support these scenarios, if they consider it necessary. See the examples in Appendix 3 for various ways in which the syllabus can be constructed.

Note: Due to the regulatory requirement for standard practices and procedures and abnormal and emergency situations training, the training should always include objectives that address approved phraseology and effective communication.

If it is necessary, and often it will be, to include training events that prepare the controller for the practical exercises, the training objectives for these events must be included in the syllabus. For more information on the structure of CCC syllabi and training events in general, refer to Chapters 3.3, 3.4 and 3.5 of the Guidance for Developing ATCO Basic Training Plans.[13]

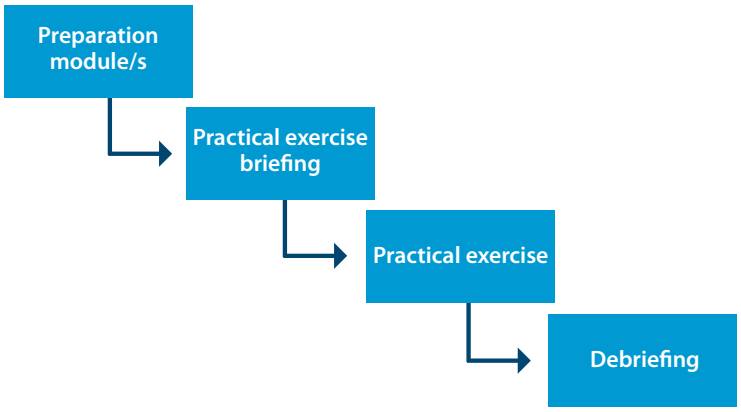
Preparing for the practical exercises does not necessarily mean only covering theory, it may include a wider variety of training events types, many of which are used today to very good effect, including discussions with flight crew, case studies, web-based videos and facilitated discussions.

[13] http://trainingzone.eurocontrol.int/publications.htm > ATC Training>Training Plans> Guidance for Developing ATCO Basic Training Plans

2.3 Sequencing a training event

Once the topics and scenarios have been chosen for a training event, the sequence of learning should be determined. This is done before considering the training material.

One of the main challenges of refresher training is how to create a realistic and practical learning environment. Often, a refresher training event will comprise of the following sequence of events:

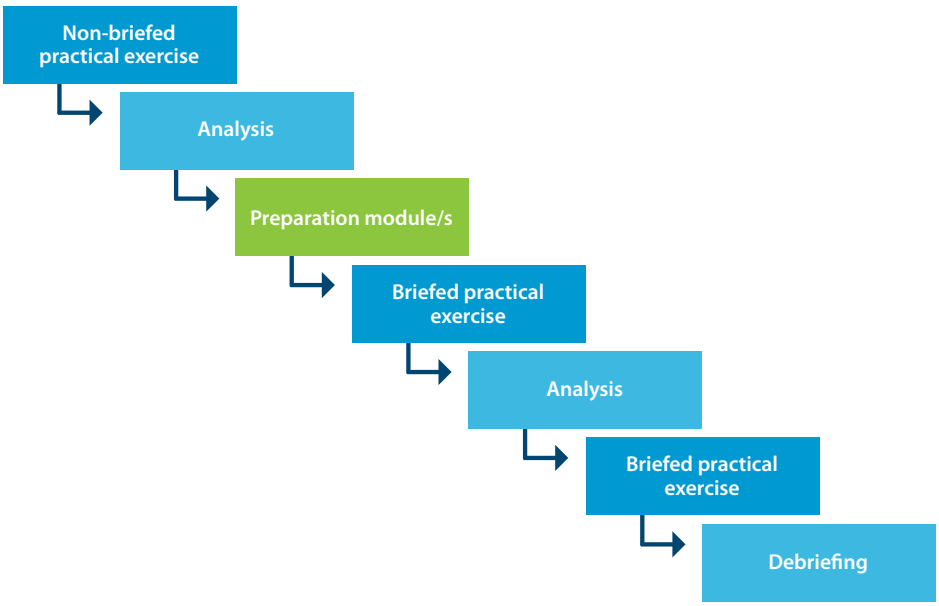


Although the above sequence of events may be suitable for many types of refresher training (but predominantly standard practices and procedures), the difficulty is that the controller already knows from the preparation module/s and briefing what they will be doing in the practical exercise. They do not get any realistic opportunity to practice dealing with an unanticipated event. They do not get any true sense of 'gradually becoming aware' or noticing that something different to the norm is starting to develop, they do not spend much time considering what this 'difference' might mean or what the potential consequences could be or what their options might be. The element of uncertainty is, to a large degree removed, so during the practical exercise the moment something starts to appear to be going wrong, the controller is already mentally priming him or herself to take action for the event they covered in the theory module.

Even if the event that is being dealt with in the practical exercise happens 'suddenly', and requires the controller to act immediately (usually an emergency situation), the controller does not get any real exposure to being 'taken by surprise' because they are already primed on which actions they need to take.

A very valuable learning opportunity, one that builds up a controllers ability to deal with surprising and unexpected events, will be lost by sequencing the learning incorrectly.

To maximise the learning value of a training event where the intention is to give the controller an opportunity to experience and then manage, a situation that is unexpected, the following sequence is proposed:



The first practical exercise is done without any briefing to the controller about what types of events could come up. The controller does the exercise as if it were a routine shift. Of course the controller knows that he/she is doing refresher training and so to some extend is likely to be more vigilant for something going wrong. Nonetheless, the exercise could be for example, a standard practices and procedures exercise at 120% of normal traffic and no planned abnormal or unusual events, or it could be an exercise with no dramatic events but rather a series of small planned communications errors, misunderstanding and callsign confusion possibilities.

At the end of the exercise, the controller and the instructor analyse the exercise. The instructor knows what the training objectives of the practical exercise are and can guide the controller through the analysis using the techniques proposed in Part 4 of this document. Since this analysis is done through a form of facilitation, it must be anticipated that it will take longer than an instructor-led de-brief and planned accordingly.

The controller then completes the preparation modules which may include any theory associated with the topics/scenarios chosen. This preparation module may not be required for every training event.

The controller then does a second practical exercise which is similar to, but not identical to the first exercise. The controller does the exercise now knowing the training objectives and with the knowledge that similar events to the first exercise will be introduced, however they may not necessarily be in the same context, at the same time or with the same consequences.

At the end of the exercise, the controller and the instructor analyse the controller performance in relation to the **competencies and the desired outcomes** defined for the topic/scenario.

The controller then does a third practical exercise which is again similar to the first and second exercises, but not identical. This exercise concludes with a debriefing.

It is very important that prior to starting the refresher training that the controller understands the concept behind the training and why the sequencing is being done, particularly in regard to the first, non-briefed exercise. The main reason for doing the non-briefed exercise is to create as realistic an environment as possible and to give the controller the opportunity and exposure to various events that are surprising or unanticipated.

2.4 Developing the practical exercises

Once the topics/scenarios are decided for each training event, the learning sequence determined and the syllabus prepared, the practical exercises can be developed.

Practical exercises should ideally be conducted in a simulated environment that is similar to the actual operational environment, with the CWP having similar functionality to the actual CWP. However, for various reasons, this is not always practical, in which case the training designer will need to plan for a number of practical training sessions that simply enable the controller to become familiar with the airspace, procedures and/or equipment.

An important element of the training design is ensuring that the conduct of the exercises reflects as closely as possible the operational environment in terms of, for example, interruptions, distractions, the speed at which information is obtained, the amount of information that is available and underspecified or ambiguous problems.

Exercise scripts support a developed exercise by providing the details of the events that can be planned into the exercise. The script is used primarily by the people responsible for running the exercise (e.g. pseudo-pilots, pseudo-adjacent sectors/units, emergency units, media) and may be used by the instructor as part of the preparation for the exercise.

Exercise scripts include, but are not limited to:

- Time or point that an aircraft declares an emergency
- Exact phrases to be used in a scripted misunderstanding/callsign confusion/distraction
- Which aircraft don't reply to instructions or delay replying or readback incorrectly
- Advice on how to respond to the controller if requested/instructed in certain situations (e.g. weather deviations)
- Exact phrases when communicating information about an abnormal situation
- Exact or approximate times at which certain items of equipment should fail
- Time or event that triggers interruptions such as unrelated coordination, queries from colleagues on unrelated matters, supervisors calling up to asking about appropriate times to take a system off-line.

2.5 Analysis of performance

The analysis of overall controller performance during a practical exercise is done with reference to the relevant performance criteria contained in the Competence Framework and for the specific scenarios, with reference to the desired outcomes in the ATC Refresher Training baseline.

For each ATC Competence that was marked with an 'x' in the baseline scenario, the training designer selects the relevant performance criteria from the Competence Framework. The Framework is generic and therefore takes into account all phases of training and possibilities, so the designer will need to determine which of the criteria are relevant to the exercise being conducted, the functionality of the simulator and the learning objectives.

For each specific scenario, the desired outcomes are taken directly from the baseline. If necessary, the training designer may elect to include additional desired outcomes that are appropriate to their specific environment.

The analysis of performance is intended to aid the controller in examining the events, the threats that needed to be managed, their reactions and responses, what could be anticipated, what occurred that was unexpected, recognising the useful and effective strategies and tactics they deployed to manage events. An important aspect of this analysis however, is to also consider the management of the overall situation and not only focus on any specific events introduced. The analysis should include a deliberation of all the elements from the Competence Framework that were identified as relevant to the scenario.

An analysis sheet would be a useful document for the instructor and controller to use as they work their way through the analysis. An analysis sheet relates directly to the topics/scenarios chosen and so would need to be prepared for each exercise. This analysis sheet would be used in conjunction with the training objectives and would contain the performance criteria and the desired outcomes for the training event, with a place to note any comments and analysis. It would not contain any references to an 'achieved/not achieved' element as this could detract from the learning value of the analysis. The analysis sheet should be kept by the controller after the exercise. Appendix 4 contains an example of an analysis sheet.

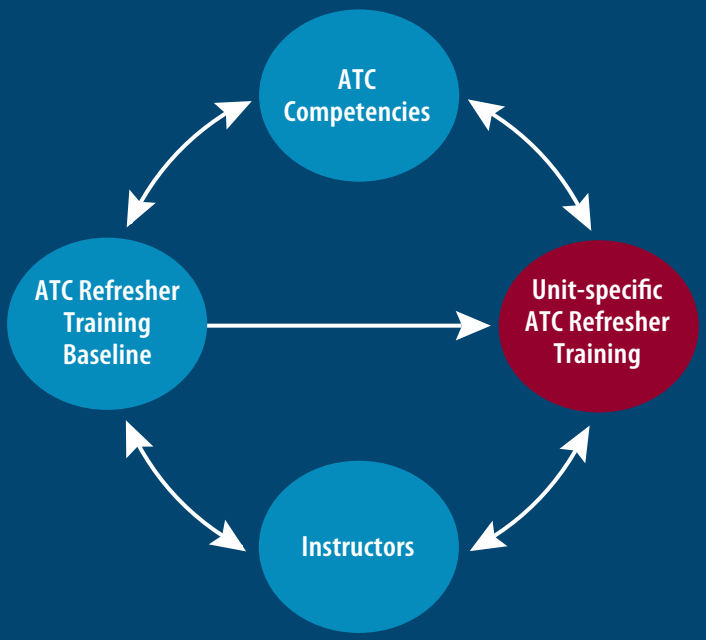
3. REVIEWING AND UPDATING THE BASELINE

The first use of the baseline for ATC Refresher Training was developed using existing and emerging safety issues highlighted by the Safety Improvements Sub-Group (SISG), contextual information derived from the EUROCONTROL Voluntary ATM Incident Reporting (EVAIR) database and topics based on the "Guidelines for Controller Training in the Handling of Unusual/ Emergency Situations" Edition 2.0.

The baseline must reflect the priorities and issues that are current and relevant for air traffic controllers, consequently the baseline must be reviewed and updated on a regular basis. The review will be done on an annual basis. Updates may also be derived from other on-going safety initiatives (e.g. runway incursions, go-arounds), trends and data of a global nature and feedback from operational training units.

PART 3

UNIT-SPECIFIC ATC REFRESHER TRAINING



Unit-specific refresher training has the greatest potential for enhancing ATC performance because it makes use of operational specific data to optimise the baseline training scenarios and target topics and scenarios that are of particular interest for the unit concerned.

To develop a unit-specific refresher training course, the following elements are necessary:

a. An ATC Competencies framework (either from this manual or developed by the unit);
b. Operational data that has been collected and analysed;
c. A refresher training matrix that shows topics, scenarios, desired outcomes and is mapped to the competencies framework (the baseline may be the starting point for this matrix);
d. The ability to develop practical training exercises based on the unit's operational environment.

As with the ATC refresher baseline, the instructors who deliver the training should be skilled at guided analysis and the air traffic controllers should be familiar with the concept and methodology that is being used for the refresher training.

It is the detailed operational specific data analysis that makes the bridge between the baseline topics/scenarios and the unit-specific topics/scenarios.

The competency framework used for the baseline and the unit specific refresher training remains the same.

1. DATA COLLECTION AND ANALYSIS

The data collected should allow for a detailed analysis of the threats and potential weaknesses in the unit's operational safety. Most of this data, with the exception of training data, resides within the safety section of a service provider. Likewise, it is usually the safety section who has the expertise to analyse most of the data. Nonetheless, the collecting and analysing of the data requires a close liaison between the safety and training sections of the service provider.

The data collection should comprise, but is not restricted to, the following:

- Analysis of Continuous Safety Surveys
- Unit-specific operational challenges
- Risk analyses and safety assessments
- Reports of incident/accident investigations
- Feedback from operational personnel
- Unit competence assessments and unit training reports
- European network safety priorities

1.1 Continuous Safety Surveys

Continuous Safety Survey (CSS) is a method for collecting safety data during normal air traffic control operations. A normal ATC operation is defined as an operation during the course of which no accident, incident or event takes place of which reporting and/or investigation are required under the existing legislation or regulations.

By conducting a series of targeted observations of ATC operations over a specific period of time and the subsequent analysis of the data thus obtained, the organisation is provided with an overview of the most pertinent threats, errors and undesired states that air traffic controllers must manage on a daily basis. One feature of CSS is that it identifies threats, errors and undesired states that are **specific to an organisation's particular operational context**, as well as how those threats, errors and undesired states are managed by air traffic controllers during normal operations[14]. ICAO's Normal Operations Safety Survey (NOSS) is one such method.

The results of a CSS are used in various ways to make changes in the safety process. These results may also be used to identify which threats could be mitigated through refresher training. The narratives used in a CSS are also an excellent source for creating realistic training environments in terms of day-to-day distractions and interruptions.

1.2 Unit-specific operational challenges

An analysis of unit-specific operational challenges provides valuable data for identifying potential refresher training topics/scenarios and ensuring that subsequent practical exercises reflect the challenges.

These challenges relate to:

- the airspace complexity
- the route network
- aircraft types and mix (IFR/VFR) operating in the airspace
- local and seasonal weather phenomena
- seasonal variations in airspace and traffic
- navaid reliability

1.3 Risk analyses and safety assessments

Risk analysis activities and safety assessments may include assumptions and safety requirements that address ATCO competencies. Safety requirements that are derived from a safety analysis may create the need for either refresher or conversion training.

1.4 Reports of accident/incident investigations

The reports of previous accidents/incidents within the unit can be analysed to determine if there are any performance issues that can be addressed through training. Analysis of accidents/incidents are also a source of data for how well an accident/incident can be managed and can be used as part of 'best practices' during refresher training.

1.5 Feedback from operational personnel

An extremely worthwhile source of data is feedback from the operational personnel. Although OJTIs and unit training personnel are the most likely source for insight into events or issues where all controllers would benefit from additional training, the controllers and supervisors are also able to provide insight into areas where there might be concerns.

[14] SKYbrary – Normal Operations Safety Survey
http://www.skybrary.aero/index.php/Normal_Operations_Safety_Survey_(NOSS)

1.6 Competence assessments and unit training reports

An analysis of routine **competence assessments and reports on unit training** may give an indication as to the areas where controllers experience difficulties.

1.7 Top 5 ATM[15] operational safety priorities

The Top 5 ATM operational safety priorities may be used as an indicator of issues in the European context that may also be relevant to the unit's operational environment.

15 Link to SKYbrary Top 5 List - http://www.skybrary.aero/bookshelf/books/2072.pdf

2. DETERMINING THE TOPICS AND SCENARIOS

Once the data has been collected and analysed, the training developer, in cooperation with the safety section, should be in a position to identify the operational safety issues for that unit. The list of issues is then compared with the units existing refresher training (i.e. the baseline) and categorised as:

a. A new topic, in which case the scenarios need to be elaborated; or
b. A new scenario or set of scenarios for which a defined topic already exists.

For the purposes of the next step, only a basic description of the scenario/s is needed.

Each scenario is then considered in terms of its likelihood, severity and the benefit of training[16].

a. Likelihood. Likelihood describes the probability that over the course of a defined period of time an air traffic controller will experience the scenario described and be required to take action or manage the situation. Five levels of likelihood are used:

1. Unlikely – once to never in a career
2. Moderately likely – probably once every 1 to 5 years
3. Likely – probably a few times per year
4. Highly Likely – At least once per month
5. Certainly – Typically every shift

b. Severity. Severity describes the most likely outcome based on the assumption that the air traffic controller has not received training to manage the described scenario. Five levels of severity are used:

1. Negligible – insignificant effect not compromising safety
2. Minor – reduction in safety (but not considered a significant reduction)
3. Moderate – safety compromised
4. Major – aircraft damage and/or injured persons
5. Catastrophic – significant damage or fatalities
6. Severity unrelated – controller actions are not a determining factor in the severity outcome

Note 1: *The most likely outcome, not the worst possible outcome, is considered.*

Note 2: *"Severity unrelated" has been included to cater for those situations where the severity of the outcome cannot be affected by the actions of the controller.*

c. Training Benefit. The training benefit is considered from one of two perspectives; either a direct or an indirect benefit.

Training Benefit – direct. Used when any levels from 1 to 5 was selected in b). The effect of training to reduce the severity of the outcome, where controller performance is likely to have an influence on the severity. Four levels are used:

1. Unimportant – training does not reduce severity
2. Minor – training may slightly reduce the severity
3. Moderate – having no training is likely to compromise safety
4. Significant – safe outcome is unlikely without effective training

Training Benefit – indirect. Used only when level 6 – Severity unrelated – was selected in b). The effect of training to manage scenarios for which the severity of the outcome is not primarily determined by the controller; however for which the controllers' actions can mitigate any secondary and indirect consequences and provide assistance to flight crews such as is possible. Again, four levels are used.

1. Unimportant – training does not enhance controller ability to manage scenario
2. Minor – training may slightly enhance controller ability to manage scenario
3. Moderate – training very likely to improve controller ability to manage scenario
4. Significant – training essential to enable controller to manage scenario

A scenario should be included in the unit-specific course if it scores a total of 7 or higher across all three elements (i.e. add the level numbers for the likelihood, severity and training benefit to determine the total).

[16] This process is adapted from the Training criticality survey contained in the Evidence-based Training Implementation Guide (2013)

Example:
For a topic on **Adverse Weather**, the following scenario is described:
Severe weather avoidance - any situation where adverse weather is affecting the standard flow of traffic, reducing the available airspace, creating new conflict points, increasing frequency occupation time, increasing coordination, creating a rapidly changing situation, degrading RVSM capability, increasing the risk of non-notified airspace penetration and limiting the ability to use radar vectoring.

The scenario is rated according to the three elements:

- Likelihood – 4
- Severity – 3
- Training Benefit – Direct – 3

The total of the three scores is 10; therefore the scenario 'Severe weather avoidance' is suitable for refresher training.

A scenario should not be included if the training benefit is considered 'unimportant'.

Each scenario that is to be included in the refresher training matrix, must be:

a. associated to a topic (existing or new)
b. described in general terms
c. associated with the relevant ATC ratings
d. described in terms of 'desired outcomes' that are mapped across to the ATC Competencies framework

If a new topic needs to be developed, it should contain:

a. a title (e.g. Communication Issues, Adverse Weather, In-flight Emergencies)
b. an association with the regulatory requirements for refresher training (i.e. Standard Practices and Procedures, Emergency and Abnormal Situations and/or Human Factors)
c. a general description

Note 1: *the ATC Refresher Training baseline is structured according to the above description.*

3. DEVELOPING UNIT-SPECIFIC REFRESHER TRAINING

Development of the syllabus, sequencing of the training events and development of the practical exercises follows the same principles as for the development of baseline ATC refresher training, however the emphasis is on creating practical exercises (and if required, theory modules) that reflect as realistically as possible, the unit's operational environment.

Where a preparation module may cover a case study that occurred in a different location to the unit, the discussions could be a reflection on the case study as it occurred, but also on the "what if x…" occurred at the unit. Generic checklists of issues to consider during emergency or abnormal situations could be made more specific, particularly as they relate to the unit's procedures.

Practical exercises should be based on the unit's airspace and procedures. In addition, information from the data collection and analysis (particularly the NOSS) could be used to include typical day-to-day distractions and interruptions that the controllers are dealing with, aside from the specific scenarios.

4. ANALYSIS OF PERFORMANCE

The analysis of overall controller performance during a practical exercise is made with reference to the relevant performance criteria contained in the Competence Framework and for the specific scenarios, with reference to the desired outcomes in the ATC Refresher Training matrix, which in this case, is a combination of the relevant baseline scenarios and unit-specific scenarios.

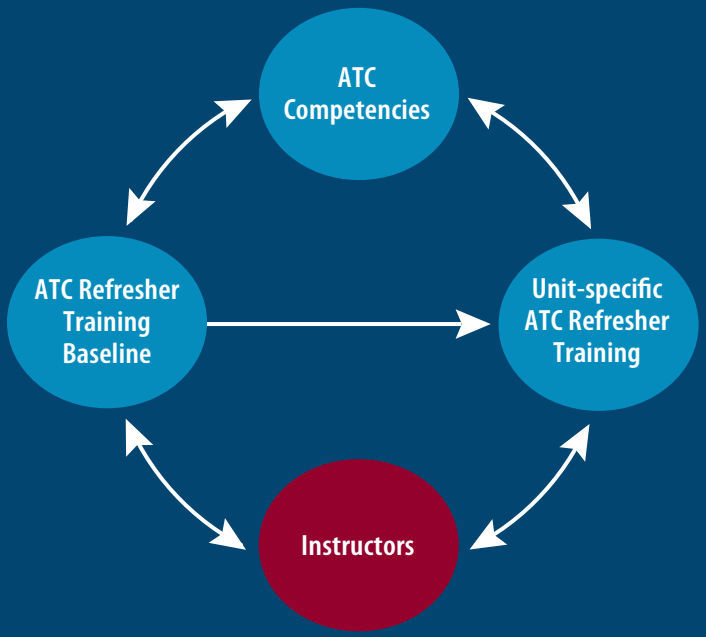
For each ATC Competence that was marked with an 'x' in the scenario, the training designer selects the relevant performance criteria from the Competence Framework. The Framework is generic and therefore takes into account all phases of training and possibilities, so the designer will need to determine which of the criteria are relevant to the exercise being conducted, the functionality of the simulator and the learning objectives.

The analysis of performance is intended to aid the controller in examining the events, the threats that needed to be managed, their reactions and responses, what could be anticipated, what occurred that was unexpected, recognising the useful and effective strategies and tactics they deployed to manage events. An important aspect of this analysis however, is to also consider the management of the overall situation and not only focus on any specific events introduced. The analysis should include a deliberation of all the elements from the Competence Framework that were identified as relevant to the scenario.

An analysis sheet would be a useful document for the instructor and controller to use as they work their way through the analysis. An analysis sheet relates directly to the topics/scenarios chosen and so would need to be prepared for each exercise. This analysis sheet would normally contain the training objectives, the performance criteria and the desired outcomes for the training event, with a place to note any analysis and comments. It would not contain any references to an 'achieved/not achieved' element as this could detract from the learning value of the analysis. The analysis sheet should be kept by the controller after the exercise. Appendix 4 contains an example of an analysis sheet.

PART 4

INSTRUCTORS



1. GENERAL

Instructors who are delivering refresher training face challenges that are very different to the challenges of initial and unit training instruction. The conventional role of the instructor is to 'teach' student/air traffic controllers the required knowledge, skills and attitudes necessary to do their job and the relationship, when instructing, can be viewed as unequal with the instructor supposedly the more competent and experienced. For refresher training it is often the case that the instructor and the 'trainee' have very similar knowledge- and skill-bases, and so the relationship between the two is peer-to-peer. This type of relationship is important as the types of issues that are being dealt with in the refresher training scenarios are not necessarily clear-cut and so there isn't one correct way to manage the issue, although there may be more effective and less effective ways to perform.

In addition, qualified air traffic controllers, like most people, are not comfortable with having any apparent weaknesses in their performance highlighted and so a more delicate technique is needed to bring about change without creating a judgemental environment.

An effective way to deliver most refresher training is through the use of guided analysis that enables the trainee to gain insight or become aware of what they are doing, to analyse their own actions or behaviour and to decide if what they are doing is good and should be maintained and developed, or if what they are doing should change. In this context, refresher training becomes an exercise in trainee self-evaluation and performance improvement that is guided by the instructor. Exceptionally, there may be instances where real 'teaching' may be necessary. The skill of the instructor is to know when to guide and when to teach.

2. PREPARING THE INSTRUCTOR FOR REFRESHER TRAINING

Instructors who conduct refresher training for the practical exercises should be:

a. familiar with the competency framework being used, in particular understand the link between scenarios and performance
b. familiar with the rationale for sequencing the training sessions
c. able to identify good performance
d. able to identify the cause for deviations below the standard of performance
e. able to guide a trainee to analyse their own performance

Much of the familiarisation detailed above, can be communicated through briefings or a short training session. The biggest challenge is to ensure that the instructors are able to use guided analysis during the practical exercises.

2.1 Guided Analysis

Guided analysis is a technique employed by an instructor that enables a trainee to self-evaluate their performance and determine what is appropriate and effective in the context of their own experience, the environment they are operating in and the scenario they are confronted with.

Guided analysis makes use of some facilitation principles and some classic instruction techniques. In the list below are some of the characteristics of a guided analysis session:

The instructor and the trainee are both familiar with the airspace and procedures and have experience of the operational environment of the exercise.
The relationship between the trainee and instructor is peer-to-peer although, of necessity, the instructor will have prior knowledge of the scenario and training objectives.
The instructor and the trainee make use of the competence framework and desired outcomes for the scenario to perform the analysis, e.g. analysis sheet for the exercise.

Trainee	Instructor
The trainee determines any personal priorities they would want to concentrate on during the exercise, in addition to the training objectives.	The instructor guides the analysis on the basis of the required competencies and the observed actions and behaviours of the trainee.
The trainee evaluates observations with the aim of reaffirming effective behaviour and changing less effective behaviour.	In guiding the analysis, the instructor highlights an observed action or behaviour without passing judgement.
The trainee does most of the talking during the analysis.	The instructor contributes to the analysis discussion with objective views and deepens the discussion with supplementary questions.
	The instructor has trained pedagogic and communication skills that the trainee may not have.

There may be a perceived contradiction between the trainee setting their own priorities and the instructor guiding the analysis. In practice, the trainee decides what areas they want to focus on and the instructor helps the trainee to analyse these areas more closely. However, the instructor may also have made pertinent observations that the trainee is simply not aware of, and can introduce these observations into the analysis. This is particularly important when the observation relates directly to the desired outcomes for the scenario.

Guided analysis assumes that the training environment is conducive to learning and that the trainee may honestly self-reflect on their performance without any concern that their expressed views may adversely affect any future formalised assessment. A sincere view expressed by a trainee that they require more practice should also be given serious consideration by the training unit.

3. THE INSTRUCTOR ROLE IN THE TRAINING SESSION

The following table elaborates on the role of the instructor during the various stages of a refresher training session.

1. Preparation for practical sessions

During this phase the instructor prepares for the refresher training sessions. This includes familiarisation with the types of scenarios that are going to be presented and the desired outcomes and competencies that are being exercised. A review of the exercise script will help the instructor to familiarise with the 'when', 'how' and 'who' of the issues that are planned. It may be beneficial for the instructor to do a test run of the exercise for themselves and to review any preparation modules that may be associated with the training.

It is also during this preparation phase that the instructor reviews what refresher training the trainee has already undertaken and notes any performance areas that may need particular attention.

2. Conduct of non-briefed practical exercise

A non-briefed exercise does, in fact, have a briefing, but it's very simple and almost always the same: the trainee is simply advised to do the exercise as if it were a routine shift. Any other part of the briefing could relate to the traffic situation at the start of the exercise and airspace and/or system status reports.

What is most important for this particular approach is that the trainee understands what the learning value of the 'blind' exercise is and has confidence that the instructor is not judging their performance but rather working with them to support their learning and skill enhancement.

Consequently, it is important that the instructor establishes a rapport with the trainee (if this rapport has not already been established in the day-to-day working environment) and confirms that at the end of the exercise, participation from the trainee, in the form of self-analysis is needed.

During this first, non-briefed exercise, intervention from the instructor is minimal, being restricted to information that is necessary for the conduct of the exercise. If it is apparent that the trainee does not have the knowledge/skills required to manage particular issues they are presented with, then the instructor may switch to 'instructing mode'. Instructors should carefully assess whether it is wise to switch to instructing mode or not; they may consider that they have a better way of managing the situation, but if the trainee is dealing with the situation, albeit in a less than efficient manner, the instructor should concentrate on analysing what is contributing to the lack of efficiency. This can then be discussed through guided analysis of the exercise and the trainee's choices and actions. Switches to instructing mode are usually only appropriate when it is clear that the trainee has no plan at all for how to manage the situation and would benefit from active prompts and transfer of knowledge.

Encouraging feedback, patience, clear communication and even humour (when appropriate) during the exercise are all attributes that are conducive to creating a positive learning environment.

3. Analysis

When facilitating the analysis, the instructor and trainee agree on what they are going to discuss and how they will go about doing it. Although this is a joint activity, the instructor must ensure that, in this first instance, the scope of the analysis is covered (i.e. the desired outcomes and competencies) during this discussion. It is the result of this analysis that will determine where their effort and concentration will be placed in the subsequent practical exercises and their analysis.

Although the instructor's observations are inevitably judgemental, in order to prompt the trainee's self-analysis, the attitude of the instructor and the manner in which the observations are communicated should be non-judgemental. Guided analysis may take longer than a structured de-briefing since the trainee will need time to reflect on his/her performance and consider what areas they need to concentrate on enhancing during the subsequent exercises.

If the simulator has the capability to record and instantly playback the exercise, this could be useful for the analysis.

On completion of the analysis, the trainee and instructor will have a clear understanding of which of the trainee's knowledge elements and skills are working well in the practical environment and which need to be worked on or enhanced during the subsequent exercises.

4. Preparation modules

The instructor may or may not be involved in the delivery of these modules, depending on the media that is used and the most appropriate expertise.

5. Conduct of the first briefed exercise

By the start of this exercise, the trainee has gained insight, from the first non-briefed practical exercise and analysis, on their performance when confronted with specific scenarios. They know which areas they need to focus on and they have completed any preparation modules that were planned to aid them in reviewing and refreshing their knowledge related to these scenarios.

The instructor may now brief the trainee more explicitly about the exercise and agree on the areas of performance that they are going to concentrate on. The amount of information that the instructor choses to give about the exercise is very much dependent on what the trainee is working on enhancing and how much learning benefit there would be to providing the additional information.

In contrast to the non-briefed exercise, the instructor now has a more active and traditional instructing role and intervenes, where necessary, to enable the development of the trainee's competence or enhance the learning experience. These interventions are, yet again, based on the agreed focus areas.

The demands on the instructor are at their highest during this exercise. The instructor needs to be able to respond flexibly to the training session by adapting their interventions and/or passing instruction to other contributors (e.g. pseudo-pilots, pseudo-adjacent units) to enable the best learning experience for the trainee. At the same time, the instructor must guard against the exercise becoming so chaotic and unmanageable that the learning value is lost, or worse becomes counter-productive. And in addition, the instructor is monitoring the trainee's performance and formulating initial observations for the analysis.

6. Analysis

The instructor guides the trainee's analysis of their own performance during this second exercise. The analysis may, quite fairly conclude that the performance is of a high standard and that the desired outcomes have been very proficiently achieved. In this instance, the analysis may very well be short and the subsequent exercise may be viewed as consolidation.

If the analysis is revealing that there are still areas where improvement or enhancement could be achieved, the instructor guides a more in-depth evaluation of the how these improvements could be made. The focus of the improvement may be on procedures or tasks, order of priority or techniques, but it may also be focussed on attitudes and behaviours if this is relevant.

On completion of this analysis the trainee and the instructor have a revised set of areas to focus on for the subsequent exercise.

7. Conduct of the second briefed exercise

The instructor role during this exercise is the same as for the first briefed exercise.

8. De-brief

The de-brief is the summation of the refresher training session. The instructor should encourage the trainee to assess their own performance. Feedback should be provided that encourages the trainee to make any changes that may be needed and provide specific recommendations to improve performance.

Together the instructor and trainee evaluate what learning has taken place, what has been achieved and which areas require more reflection or, if necessary, practice.

REFERENCES

- COMMISSION REGULATION (EU) 2015 of 20 February 2015 laying down the technical requirements and administrative procedures relating to air traffic controllers' licences and certificates pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, amending Commission Implementing Regulation (EU) No 923/2012 and repealing Commission Regulation (EU) No 805/2011
- ICAO Doc 9868. Procedures for Air Navigation Services – Training (PANS-TRG)
- ICAO Doc 9910. Normal Operations safety Survey. Ed. 1.0 (2008)
- ICAO Doc 9995. Manual of Evidence-based Training. Ed. 1.0 (2013)
- EUROCONTROL (2003). Guidelines for Controller Training in the Handling of Unusual/Emergency Situations. Ed. 2.0. Brussels: EUROCONTROL.
- EUROCONTROL (2010). Guidance for Developing ATCO Basic Training Plans. Ed 2.0. Brussels: EUROCONTROL.
- IATA, ICAO, IFALPA (2013). Evidence-based Training Implementation Guide. Ed.1.0.

APPENDIX 1 - ICAO ATC COMPETENCY FRAMEWORK

Note: *The framework shall be adapted to the local context of the organisation. The framework is generic and shall be adapted to the operating environment and challenges of the organisation as well as to the professional experience of the ATCOs. It does not address the specific definition of duties, sharing of tasks, ratings and proficiency levels existing in the organisation. Local implementation of these frameworks includes selecting competencies appropriate to their local context.*

Note: *Performance criteria defined in the following tables may serve one or more of the competency units and elements.*

Competency Unit 1	Situational Awareness	**Definition**	Comprehend the current operational situation and anticipate future events

CE No.	**Competency Element**
CE 1.1	Monitor the operational situation
CE 1.2	Scan for specific or new information
CE 1.3	Comprehend the operational situation
CE 1.4	Anticipate the future situation
CE 1.5	Recognise indications of reduced situational awareness
PC No.	**Performance Criteria (Observable Behaviour)**
PC 1.1	Monitors air traffic in own area of responsibility and nearby airspaces
PC 1.2	Monitors the meteorological conditions that impact on own area of responsibility and nearby airspaces
PC 1.3	Monitors the status of the ATC systems and equipment
PC 1.4	Monitors the operational circumstances of personnel in nearby sectors to anticipate impact on own situation
PC 1.5	Obtains information from available surveillance and flight data systems, meteorological data, electronic data displays, and any other means available
PC 1.6	Integrates information obtained from monitoring and scanning into overall picture
PC 1.7	Analyses the actual situation based on information obtained from monitoring and scanning
PC 1.8	Interprets the situation based on the analysis
PC 1.9	Predicts the future operation situation
PC 1.10	Identifies potentially hazardous situations (e.g. amount of separation with other aircraft, objects, airspace and ground, consequences of adverse weather, navigational deviations and capacity overload)
PC 1.11	Verifies that information is accurate and assumptions are correct
PC 1.12	Uses available tools to monitor, scan, comprehend and predict operational situation

Competency Unit 2	Traffic and Capacity Management	Definition	Ensure a safe, orderly and efficient traffic flow and provide essential information on environment and potentially hazardous situations

CE No.	Competency Element
CE 2.1	Manage traffic situation
CE 2.2	Achieve optimal operational performance
CE 2.3	Disseminate flight information
CE 2.4	Inform pilots of essential traffic and weather information
PC No.	**Performance Criteria (Observable Behaviour)**
PC 2.1	Manages arriving, departing and/or en-route traffic using prescribed procedures
PC 2.2	Takes aircraft performance into account when issuing clearances and instructions
PC 2.3	Uses a variety of techniques to effectively manage the traffic (e.g. speed control, vectoring, traffic sequencing, rate of climb/rate of descent control)
PC 2.4	Increases safety margins when deemed necessary
PC 2.5	Takes action, when appropriate, to ensure that demand does not exceed sector capacity
PC 2.6	Maintains focus despite varying traffic levels
PC 2.7	Reacts appropriately to situations that have the potential to become unsafe
PC 2.8	Issues clearances and instructions to the flight crew that result in cost-effective and efficient traffic flow
PC 2.9	Issues appropriate clearances and instructions
PC 2.10	Issue clearances and instructions in a timely manner
PC 2.11	Uses available tools to reduce delays and optimise flight profiles
PC 2.12	Provides flight information and status of facilities in a timely manner
PC 2.13	Issues hazard and safety alerts to the flight crews when necessary
PC 2.14	Issues traffic proximity information to flight crews in a relevant, accurate and timely manner
PC 2.15	Issues weather information to flight crews when necessary

Competency Unit 3	Separation and Conflict Resolution	Definition	Manage potential traffic conflicts and maintain separation

CE No.	Competency Element
CE 3.1	Detect potential traffic conflicts
CE 3.2	Resolve traffic conflicts
CE 3.3	Maintain separation between aircraft
CE 3.4	Maintain separation of aircraft from terrain and known obstacles
PC No.	**Performance Criteria (Observable Behaviour)**
PC 3.1	Identifies traffic conflicts
PC 3.2	Selects the most appropriate separation method
PC 3.3	Applies appropriate air traffic separation and spacing
PC 3.4	Issues clearances and instructions that ensure separation is maintained
PC 3.5	Issues clearances and instructions that take into account aircraft performance, terrain obstacles, airspace constraints and weather
PC 3.6	Issues clearance and instructions that resolve traffic conflicts
PC 3.7	Resolves conflicts through coordination with adjacent sectors or units
PC 3.8	Monitors the execution of separation actions
PC 3.9	Adjusts control actions, when necessary, to maintain separation

Competency Unit 4	Communication	Definition	Communicate effectively in all operational situations

CE No.	Competency Element
CE 4.1	Select appropriate mode of communication
CE 4.2	Demonstrate effective verbal communication
CE 4.3	Demonstrate effective non-verbal communication
CE 4.4	Demonstrate effective written and automated communication
PC No.	**Performance Criteria (Observable Behaviour)**
PC 4.1	Selects communication mode that takes into account the requirements of the situation, including speed, accuracy and level of detail of the communication
PC 4.2	Speaks clearly, accurately and concisely
PC 4.3	Uses appropriate vocabulary and expressions to convey clear messages
PC 4.4	Uses standard RT phraseology, when prescribed
PC 4.5	Adjusts speech techniques to suit the situation (e.g. urgent situation or listener having difficulty understanding)
PC 4.6	Demonstrates active listening by asking relevant questions and providing feedback
PC 4.7	Verifies accuracy of readbacks and corrects as necessary
PC 4.8	Uses plain language when standardised phraseology does not exist or the situation warrants it
PC 4.9	Uses eye contact, body movements and gestures that are consistent with verbal messages and the environment
PC 4.10	Writes or inputs messages according to protocol or in a clear and concise manner where protocol does not exist
PC 4.11	Communicates relevant concerns and intentions

Competency Unit 5	Communication	Definition	Manage coordination between operational positions and with other affected stakeholders

CE No.	Competency Element
CE 5.1	Determine the need for coordination
CE 5.2	Select appropriate method of coordination
CE 5.3	Perform coordination
PC No.	**Performance Criteria (Observable Behaviour)**
PC 5.1	Achieves timely coordination with personnel in other operational positions and stakeholders
PC 5.2	Selects coordination method based on circumstances, including urgency of coordination, status of facilities and prescribed procedures
PC 5.3	Coordinates the movement, control and transfer of control for flights using the prescribed coordination procedures
PC 5.4	Coordinates changes of status of operational facilities such as equipment, systems and functions
PC 5.5	Coordinates changes of status of airspace and aerodrome resources
PC 5.6	Coordinates with other stakeholders when necessary
PC 5.7	Uses standardised phraseologies for verbal coordination
PC 5.8	Uses standard ATS message formats and protocol for non-verbal coordination
PC 5.9	Uses clear and concise non-standard coordination when required
PC 5.10	Conducts effective briefings during position handover

Competency Unit 6	Management of Non-routine Situations	Definition	Detect and respond to emergency and unusual situations related to aircraft operations and manage degraded modes of ATS operation

CE No.	Competency Element
CE 6.1	Manage emergency and unusual situations related to aircraft operations
CE 6.2	Manage degraded modes of ATS operations
PC No.	**Performance Criteria (Observable Behaviour)**
PC 6.1	Determines the nature of the emergency
PC 6.2	Prioritises actions based on the urgency of the situation
PC 6.3	Decides upon the most appropriate type of assistance that can be given
PC 6.4	Follows prescribed procedures for communication and coordination of urgent situations
PC 6.5	Detects that ATS systems and/or equipment have degraded
PC 6.6	Assesses the impact of degraded mode of operation
PC 6.7	Takes action, when necessary, to ensure safety of aircraft in area of responsibility
PC 6.8	Uses standard ATS message formats and protocol for non-verbal coordination
PC 6.9	Follows prescribed procedures for coordinating and communicating a degraded mode of operation
PC 6.10	Creates solutions when no procedure exists for responding to non-routine situations

Competency Unit 7	Problem Solving and Decision-making	Definition	Find and implement solutions for identified hazards and associated risks

CE No.	Competency Element
CE 7.1	Determine possible solutions to an identified problem
CE 7.2	Prioritise effectively
CE 7.3	Manage risks effectively
PC No.	**Performance Criteria (Observable Behaviour)**
PC 7.1	Takes into account the existing rules and operating procedures when determining possible solutions to a problem
PC 7.2	Implements a chosen solution to a problem
PC 7.3	Determines which situations have the highest priority
PC 7.4	Organises tasks in accordance with the list of priorities
PC 7.5	Applies appropriate mitigation strategy for the hazards identified
PC 7.6	Perseveres in working through problems without impacting safety
PC 7.7	Considers timeliness and efficiency in decision making

Competency Unit 8	Self-Management and Continuous Development	Definition	Demonstrate personal attributes that improve performance and maintain an active involvement in self-learning and self-development

CE No.	Competency Element
CE 8.1	Manage stress in an appropriate manner
CE 8.2	Self-evaluate to improve performance
CE 8.3	Use feedback to improve performance
CE 8.4	Adapt to the demands of a situation, as needed
CE 8.5	Engage in continuous development activities
PC No.	**Performance Criteria (Observable Behaviour)**
PC 8.1	Takes responsibility for own performance and self-corrects own errors
PC 8.2	Improves performance through self-evaluation of the effectiveness of actions
PC 8.3	Accepts feedback and learns from mistakes
PC 8.4	Maintains self-control in all situation and performs adequately in adverse situations
PC 8.5	Prioritises, changes behaviour and responds as needed to deal with the demands of the changing situation
PC 8.6	Maintains, through personal initiative, good knowledge of aviation evolution
PC 8.7	Participates in planned learning activities (e.g. team meetings, briefing and training sessions)

Competency Unit 9	Workload Management	Definition	Use available resources to prioritize and perform tasks in an efficient and timely manner

CE No.	Competency Element
CE 9.1	Adapt to differing workload conditions
CE 9.2	Recognise where and when assistance is needed
CE 9.3	Request assistance when and where required
CE 9.4	Manage time effectively
CE 9.5	Use ATS equipment efficiently and effectively
PC No.	**Performance Criteria (Observable Behaviour)**
PC 9.1	Plans, prioritises and schedules tasks effectively in response to the current workload
PC 9.2	Manages interruptions and distractions effectively
PC 9.3	Determines if and when support is necessary based on workload
PC 9.4	Ask for help, when necessary
PC 9.5	Delegates tasks when necessary to reduce workload
PC 9.6	Accepts assistance, when necessary
PC 9.7	Adjusts the pace of work according to workload
PC 9.8	Selects appropriate tools, equipment and resources to support the efficient achievement of tasks
PC 9.9	Uses automated capabilities of ATS equipment to improve efficiency

Competency Unit 10	Teamwork	Definition	Operate as a team member

CE No.	Competency Element
CE 10.1	Adapt to differing workload conditions
CE 10.2	Recognise where and when assistance is needed
CE 10.3	Request assistance when and where required
CE 10.4	Manage time effectively
PC No.	**Performance Criteria (Observable Behaviour)**
PC 10.1	Provides both positive and negative feedback constructively
PC 10.2	Accepts both positive and negative feedback objectively
PC 10.3	Shows respect and tolerance for other people
PC 10.4	Carries out actions and duties in a manner that fosters a team environment
PC 10.5	Contributes to an effective team environment by managing conflict
PC 10.6	Uses negotiating and problem-solving techniques to help resolve unavoidable conflict
PC 10.7	Raises relevant concerns in an appropriate manner
PC 10.8	Anticipates and responds appropriately to the needs of others
PC 10.9	Shares experiences with the aim of continuous improvement

APPENDIX 2 - ATC REFRESHER TRAINING BASELINE

Note: *The spreadsheet containing the most up-to-date version of the baseline may be downloaded from the EUROCONTROL Training Zone.*

ATC Refresher Training Baseline

Training Topic	Types of refresher training	Description of the topic	Scenarios	Training objectives	Relevant ATC Licence Ratings
Communication issues	SPP and AES	This is a general focus area that is concerned with any situations where correct and clear communication is required to ensure safe operations. This includes air-ground and ground-ground communication.	**Communications Failure** - one or more aircraft experience a partial or complete loss of communications.	Manage a complete loss of radio communication with an aircraft effectively Manage a partial loss of radio communication with an aircraft effectively	All
			Misunderstandings - one or more persons in a communication, misunderstanding the message. This may be between the controller and air crews or ground actors (e.g. other controllers, supervisors etc.).	Manage communication misunderstandings effectively	All
			Radio Discipline - any situation where communication is required.	Use appropriate radio telephony phraseology Apply correct radio communication techniques	All
			Callsign confusion - two or more aircraft on the same frequency, in the same airspace with similar callsigns that are likely to cause confusion.	Manage callsign confusion issues	All
Stabilised Approaches	SPP	This is a general focus area for approach surveillance that is concerned with any situation where the controller has an impact on a flight crew's ability to achieve a stabilised approach.	**Speed instructions** - any approach traffic situation where ATC speed control could have an impact on a flight crew's ability to achieve a stabilised approach.	Ensure that own actions do not contribute to a destabilised approach Ensure effective and appropriate use of speed control techniques for approach sequencing purposes	APS
			Distance to touchdown - any approach traffic situation where ATC information concerning distance to touchdown can have an impact on a flight crew's ability to achieve a stabilised approach.	Ensure that own actions do not contribute to a destabilised approach Ensure effective and appropriate use of vectoring for approach sequencing purposes Provide distance to touchdown information appropriately	APS
			Late changes of runway - any approach traffic situation where a change of runway, given at short notice could have an impact on flight crews' ability to achieve a stabilised approach.	Ensure that own actions do not contribute to a destabilised approach Manage late changes of runway effectively	APS

	ATC Competencies									
Desired Outcomes	SITU	TRAF	SEPC	COMM	CORD	NONR	PROB	SELF	WORK	TEAM
Identifies that a loss, or partial loss of communications has occurred	x			x	x	x	x			
Identifies the reason for the loss of communications				x	x		x			
Executes appropriate procedure	x	x	x	x	x	x			x	x
Anticipates possible outcomes and likely consequences	x						x			
Manages consequences		x	x	x	x	x				
Recognise that a misunderstanding may have occurred	x			x			x	x		
Takes action to clarify if a misunderstanding has occurred				x	x			x		
Corrects misunderstandings, when applicable				x	x					
Manages any consequences of the misunderstanding	x	x	x	x	x		x			
Takes extra care when language difficulties are apparent				x						
Uses clear and unambiguous phraseology at all times				x	x					
Use standard RT phraseology, when prescribed				x	x					
Insists on complete readbacks of clearances and instructions from pilots at all times				x						
Corrects any error in read-back and insist on further read-back until certain that the clearance has been correctly copied				x						
Issues conditional clearances that are correct and complete				x						
Avoids distractions when listening to readbacks				x						
Avoids issuing more than two instructions in the same transmission				x						
Uses standard coordination phraseology, when prescribed				x	x					
Does not pass RTF frequency changes as part of a multi-part clearance				x						
Identifies callsigns that could potentially lead to confusion	x						x			
Monitors flight crew compliance with RTF call sign use				x						
Warns the pilots of aircraft on the same RT frequency having similar call signs that call sign confusion may occur				x			x			
Pronounces call signs at a lower speed and more clearly				x						
Instructs one or both aircraft to use alternative call signs while they are on the frequency, if callsign confusion is problematic				x			x			
Issues speed instructions that are appropriate for the aircraft type and its position in relation to the final approach track	x	x	x	x			x		x	
Avoids issuing instructions that include both a descent clearance and a speed reduction	x	x					x			
Recognises traffic situations where speed restrictions are having an impact on the flight crew ability to stabilise their approach	x						x			
Cancel speed restrictions at a time that will enable the flight crew to stabilise their approach	x	x	x	x			x			
Avoids routine vectoring for the sole purposes of shortening the flight path		x								
Always passes accurate distance to touchdown information when aircraft are being vectored to final approach				x						
Vectors aircraft so that they intercept the glide slope from below	x	x								
Recognises when an aircraft are unlikely to stabilise their approach due to excessive height relative to their distance to touchdown	x						x			
Avoids close-in turns onto final approach	x	x		x						
Recognises situations where a late change of runway will result in a significantly increased workload for the flight crew	x	x								
Issues instructions that takes into consideration the flight crews requirement to achieve a stabilised approach, during a necessary late change of runway	x	x	x	x			x			
Monitors the forecast and actual trend in wind velocity regularly	x									
Avoids offering a change of runway (including a parallel runway) to aircraft below FL100 simply to achieve a reduction in ground delay		x								

ATC Refresher Training Baseline

Training Topic	Types of refresher training	Description of the topic	Scenarios	Training objectives	Relevant ATC Licence Ratings
Adverse Weather	AES	This topic is concerned with threats that arise from adverse weather conditions that are either impacting the management of air traffic or affecting the flight capabilities of aircraft.	**Severe weather avoidance** - any situation where adverse weather is affecting the standard flow of traffic, reducing the available airspace, creating new conflict points, increasing frequency occupation time, increasing coordination, creating a rapidly changing situation, degrading RVSM capability, increasing the risk of non-notified airspace penetration and limiting the ability to use radar vectoring.	Manage traffic during adverse weather conditions	ALL
			Icing - any situation where one or more flight crew report in-flight icing, or meteorological reports indicate areas of possible icing.	Manage traffic taking into account the icing conditions in area of responsibility Assist aircraft experiencing in-flight icing	APP APS ACP ACS
			Strong low level/surface winds - any situation where aircraft at low altitude (usually approach, landing and climbing phases of flight) are affected by strong, low level winds that can be particularly dangerous as any loss of control that may occur is so close to terrain that recovery may be difficult or impossible. Includes, but not limited to windshear related to thunderstorms, microbursts and severe cross-winds.	Manage traffic taking into account the effects of strong low level wind	TWR APP APS
System Wide Event	AES	This topic is concerned with the response of air traffic controllers to a system-wide catastrophic event. System-wide events include, but are not limited to, events related to volcanic eruptions, nuclear fallout, earthquakes, floods, acts of war or any other catastrophic event which might render many airports and extensive airspace volumes unusable in a wide geographic area for an uncertain amount of time.	**En-route Control Units** - any chosen system-wide event that increases the volume of traffic, the complexity of operations due to non-standard traffic (diverting aircraft and re-routing actions), missing and/or incorrect flight plans, congested radio frequency due to clarification requests and prolonged individual communications, missed radio calls and increases coordination with adjacent ATC units.	Manage traffic situation during system wide event	ACP ACS
			Approach Control Units - any chosen system-wide event that increases the volume of traffic, creates airspace and aerodrome capacity problems, increases the coordination with adjacent units and introduces flight crews into the airspace who may not be immediately familiar with the approach procedures and aerodrome details.	Manage traffic situation during system wide event	APP APS
			Tower Control Units - any chosen system-wide event that creates capacity problems due to the extra inbound traffic, increases communication with crews requesting start up, increases coordination, introduces flight crews who are not familiar with the aerodrome layout and consequently taxi slower and have poorer situational awareness.	Manage traffic situation during system wide event	TWR

	ATC Competencies									
Desired Outcomes	SITU	TRAF	SEPC	COMM	CORD	NONR	PROB	SELF	WORK	TEAM
Maintains awareness of the adverse weather location using which ever sources are available	x				x					x
Requests details from flight crew on their planned avoiding actions	x	x	x	x	x	x	x		x	x
Implements strategies for crosschecking the current, planned and intended actions of flight crew with regard to weather avoidance actions				x	x	x	x			x
Coordinates timely information to adjacent sectors when aircraft deviations may penetrate their airspace	x	x	x		x	x				x
Actively seeks information about aircraft that appear likely to enter own sector	x	x	x		x	x	x			x
Requests assistance, when necessary	x	x			x			x		x
Builds in extra safety margins including increased lateral and vertical separation, when considered necessary	x	x	x	x	x					
Informs flight crew if their weather avoidance will take aircraft outside of controlled airspace	x									
Informs aircraft of icing conditions	x			x	x	x				
Expedites traffic through or away from icing area	x	x				x				
Anticipates effects of in-flight icing on aircraft performance	x	x				x				
Responds to promptly to flight crew requests for change of level or heading	x			x		x				
Manages traffic taking into account the possible actions of aircraft encountering windshear and microbursts	x			x		x			x	
Provides traffic information and instructions, as appropriate, when an aircraft announces a go-around due windshear	x	x		x		x				
Informs aircraft of relevant strong low level wind conditions	x	x								
Manages traffic in accordance with information received concerning the system wide event	x	x	x			x	x		x	x
Provides information pertinent to the situation and to flight crews decision-making		x		x	x	x				
Responds to flight crew requests taking into account the constraints imposed by the system wide event	x	x								
Manages traffic in accordance with information received concerning the system wide event	x	x	x			x	x		x	x
Advises flight crews on details regarding aerodromes they may not be familiar with	x	x		x						
Provides any pertinent information that helps improve the flight crews situational awareness and make informed decisions about the continuation of their flight	x	x		x						
Provides information, related to the specifics of approach procedures, to flight crews who are likely to be unfamiliar with the procedures due to the changed destination	x	x		x		x				
Manage traffic in accordance with information received concerning the system wide event	x	x	x			x	x		x	x
Coordinates with airport authorities the availability of parking stands and the possibilities to park aircraft on taxiways if the capacity problem is severe					x					
Provides additional assistance to flight crews not familiar with aerodrome	x	x		x						
Provides any pertinent information to departing flight crews that aids their decision-making concerning the continuation of their flight	x	x		x						

ATC Refresher Training Baseline

Training Topic	Types of refresher training	Description of the topic	Scenarios	Training objectives	Relevant ATC Licence Ratings
In-flight emergencies	AES	This topic covers a wide variety of in-flight emergencies. These types of emergencies are often characterised by rapidly changing circumstances and require the controller to evaluate the situation, often with limited or incomplete information, and then decide on the effective way to offer assistance. For many of these in-flight emergencies, there are prescribed actions and procedures however circumstances may dictate that the controller create solutions because there is no defined procedure.	**Smoke or fire in the cockpit** - during any phase of flight, the crew reports either smoke or fire in the cockpit and requests to divert to the nearest suitable airfield or priority landing if already approaching the destination aerodrome. At a certain point during the diversion, the pilot reports very poor visibility in the cockpit due to smoke. The scenario may include an emergency descent.	Manage the traffic situation whilst dealing with an aircraft with fire or smoke in the cockpit	All
			Electrical problems - during any phase of flight, the crew experiences either partial or complete electrical failure. The effects of the electrical failure can vary from affecting the navigational systems, to anti-cing, transponders, controls and indicators, lighting.	Manage the traffic situation whilst dealing with an aircraft with electrical problems	All
			Hydraulics problems - during any phase of flight, the crew reports a problem with hydraulics. This might range from partial/total loss of control whilst flying, difficulties extending/retracting landing gear, lack of auto-pilot or reduced braking upon landing, high approach speed.	Manage the traffic situation whilst dealing with an aircraft with hydraulics problems	All
In-flight emergencies	AES	This topic covers a wide variety of in-flight emergencies. These types of emergencies are often characterised by rapidly changing circumstances and require the controller to evaluate the situation, often with limited or incomplete information, and then decide on the effective way to offer assistance. For many of these in-flight emergencies, there are prescribed actions and procedures however circumstances may dictate that the controller create solutions because there is no defined procedure.	**Fuel problems** - during any phase of flight, the crew reports a fuel problem that may range from being below the legal minimum to fuel exhausted.	Manage the traffic situation whilst dealing with an aircraft with fuel problems	All
			Bird strike - a bird or birds hits an aircraft shortly after take-off or before landing and either the windshield, engine, fuselage, landing gear or hydraulics or a combination are damaged.	Manage the traffic situation whilst dealing with an aircraft that has experienced a birdstrike	TWR
			Pressurisation problems - aircraft performs an emergency descent, with or without warning, due to pressurisation problems. On reaching FL100, aircraft requests priority landing at nearest suitable aerodrome.	Manage the traffic situation whilst dealing with an aircraft experience pressurisation problems	ACP ACS

	ATC Competencies									
Desired Outcomes	SITU	TRAF	SEPC	COMM	CORD	NONR	PROB	SELF	WORK	TEAM
Offers any appropriate assistance	x		x			x	x			
Coordinates with appropriate ATC units and other services, as required					x					
Prioritises actions depending on the evolution of the situation						x			x	
Uses appropriate elements of the unit emergency checklist						x				
Evaluates overall workload and requests support, when necessary									x	
Provides information to flight crew regarding closest and/or most suitable aerodromes when appropriate		x				x				
Offers any appropriate assistance	x			x		x	x			
Coordinates with appropriate ATC units and other services, as required					x					
Prioritises actions depending on the evolution of the situation						x			x	
Uses appropriate elements of unit emergency checklist						x				
Evaluates overall workload and requests support, when necessary									x	
Provides information to flight crew regarding closest and/or most suitable aerodromes when appropriate		x				x				
Provides increased separation between affected aircraft and other aircraft	x		x							
Offers any appropriate assistance	x			x		x	x			
Coordinates with appropriate ATC units and other services, as required					x					
Prioritises actions depending on the evolution of the situation						x			x	
Uses appropriate elements of unit emergency checklist						x				
Evaluates overall workload and requests support, when necessary									x	
Provides information to flight crew regarding closest and/or most suitable aerodromes when appropriate		x				x				
Identifies accurately the fuel status of the affected aircraft						x				
Provides control actions that ensure efficient use of remaining fuel	x					x				
Coordinates with appropriate ATC units and other services, as required					x					
Uses appropriate elements of the unit emergency checklist						x				
Provides aerodrome and weather information		x								
Prioritises actions depending on the evolution of the situation	x	x							x	
Evaluates overall workload and requests support, when necessary									x	
Prioritises actions based on the seriousness of the situation	x					x			x	
Offers any appropriate assistance	x			x		x	x			
Uses appropriate elements of the unit emergency checklist						x				
Coordinates with appropriate ATC units and other services, as required					x					
Evaluates overall workload and requests support, when necessary									x	
Clears airspace immediately below and in the vicinity of emergency aircraft	x	x	x			x				
Provides separation and/or issues essential traffic information, as required	x	x	x			x				
Provides information to flight crew regarding closest and/or most suitable aerodromes, when appropriate		x								
Uses appropriate elements of the unit emergency checklist						x				
Coordinates with appropriate ATC units and other services, as required					x					
Evaluates overall workload and requests support, when necessary									x	

ATC Refresher Training Baseline

Training Topic	Types of refresher training	Description of the topic	Scenarios	Training objectives	Relevant ATC Licence Ratings
Workload Management	SPP	This topic is concerned with the controller's ability to manage their workload under varying conditions.	**Working at the limits of airspace capacity** - any scenario where the controller is required to work at maximum, or 10-20% above maximum capacity, without the addition of non-routine situations.	Provide safe and efficient ATC service during over capacity conditions Take action to reduce the workload to normal operating capacity Take action to ensure personal workload capacity is not exceeded	All
			Unusual operating configurations - any scenario where the traffic capacity remains normal to high, but the operating configuration of the airspace or aerodrome is non-standard. This could include reduced runway lengths, significant taxiways closed, non-standard airspace sector configurations and non-standard reductions in available airspace.	Provide safe and efficient ATC service whilst subject to unusual operating configurations	All
Aircraft Engines	AES	This topic is focused on emergency scenarios involving aircraft engines. In the case of engine failure, the degree of urgency is dependent on what stage of the flight the aircraft is at and how many engines the aircraft has.	**Engine Failure** - any scenario where an aircraft experiences engine fire. The aircraft may have one or multiple engines.	Manage the traffic situation whilst dealing with an aircraft experiencing engine failure	All
			Engine Fire - any scenario, either in the air or on the ground, where an aircraft experiences engine fire. The aircraft may have one or multiple engines.	Manage the traffic situation whilst dealing with an aircraft experiencing engine failure	All
Unlawful Interference	AES	This topic is focussed on the high stress situations that are brought about by unlawful interference. These situations are often characterised by high unpredictability and at the same time, the need for the controller to follow the instructions of other authorised personnel who are trained specifically to deal with these situations. Calm and clear communication is essential during the management of these situations.	**Bomb Warning** - flight crew reports that they have been notified that the aircraft has a bomb onboard, or have identified a potential bomb onboard. The aircraft may be in the air or on the ground.	Manage the traffic situation whilst dealing with a bomb warning on an aircraft	All
			Hi-jack - an aircraft is hi-jacked, either on the ground or in the air. The scenario is characterised at first, by confusing messages being passed by the flight crew and unexpected manoeuvre from the flight. As the scenario develops, the hi-jacker makes demands that the controller will need to manage. The demands can vary from diverting to a different destination, to actions that are outside of the controller's responsibility (e.g. release of political prisoners).	Manage the traffic situation whilst dealing with a hi-jack situation	All
			Lazer Interference - pilots report that, in vicinity of an aerodrome, someone is directing lazer beams at aircraft and in some instances into the cockpit.	Manage the traffic situation whilst dealing with lazer interference	TWR APP APS

	ATC Competencies									
Desired Outcomes	SITU	TRAF	SEPC	COMM	CORD	NONR	PROB	SELF	WORK	TEAM
Plans tasks effectively in response to the workload	x	x	x						x	
Prioritises tasks based on the workload	x								x	
Requests assistance, when necessary								x		x
Uses flow control actions to achieve optimal workload	x	x								
Plans tasks to take into account the unusual configuration	x	x	x						x	
Uses flow control actions to achieve optimal workload	x	x								
Requests assistance, when necessary								x		x
Identifies accurately the urgency of the situation						x				
Anticipates aircraft's altitude and navigational requirements	x					x				
Coordinates with appropriate ATC units and other services, as required					x					
Uses appropriate elements of the unit emergency checklist						x				
Prioritises actions depending on the evolution of the situation		x								
Evaluates overall workload and requests support, when necessary									x	x
Provides information to flight crew regarding closest and/or most suitable aerodromes when appropriate		x				x				
Anticipates aircraft's altitude and navigational requirements						x				
Coordinates with appropriate ATC units and other services, as required					x					
Uses appropriate elements of unit emergency checklist						x				
Prioritises actions depending on the evolution of the situation		x								
Evaluates overall workload and requests support, when necessary									x	x
Provides information to flight crew regarding closest and/or most suitable aerodromes when appropriate		x				x				
Offers any appropriate assistance	x			x		x	x			
Performs procedures in accordance with local instructions						x				
Anticipates aircrafts altitude requirements, if required	x					x				
Communicates all information to the flight crew in a calm manner				x						
Takes action to clear the airspace immediately below and/or around the affected aircraft	x	x								
Coordinates with appropriate ATC units and other services, as required					x					
Identifies that a hi-jack situation has occurred	x									
Manages unexpected and unannounced course/level deviations, as they occur	x	x	x			x				
Use appropriate RT phraseology and communication procedures for hi-jack situation				x						
Communicates all information to the flight crew in a calm manner				x						
Performs procedures in accordance with local instructions						x				
Coordinates with appropriate ATC units and other services, as required					x					
Informs aircraft of the situation				x						
Follows local procedures for dealing with lazer interference	x	x				x				

ATC Refresher Training Baseline

Training Topic	Types of refresher training	Description of the topic	Scenarios	Training objectives	Relevant ATC Licence Ratings
Runway Management	SPP and AES	This topic is concerned the management of runways when aircraft, for various reasons cause the runway to be closed for a period of time or enter the runway without clearance. The controller not only has to manage the event but also the remaining traffic that will not be able to use the blocked runway.	**Incursions** - an aircraft or vehicle attempts to enters/crosses an active runway without clearance to do so. The incursion should occur at a time when safety could be compromised if not detected. Incorrect readbacks and misunderstanding could be the cause for the incursion.	Manage a runway incursion Take action to prevent a runway incursion	TWR
			Excursions - an aircraft overruns on take off, or undershoots the runway on landing, or deviates off the side of the runway during either landing or take off	Manage a runway excursion	TWR
			Gear problems - aircraft arriving at aerodrome reports no gear or only partial gear deployment	Manage the traffic situation whilst dealing with an aircraft with gear problems	TWR
			Braking problems - the flight crew report brake problems. The aircraft lands and blocks the runway due to damaged to its tyres.	Manage the traffic situation whilst dealing with an aircraft with braking problems	TWR
			Go-arounds - any situation, initiated by either controller or pilot, where a go-around manouevre is carried out	Manage the traffic situation whilst dealing with a go-around.	TWR, APP, APS
Collision Avoidance	AES	This topic deals with situations where there is either imminent or gradual risk of collision. The reason for the risk of collision is not the focus of this training. The focus is on the ability of the controller to take immediate and decisive action, faced with a collision risk situation and to then recover the traffic flow after separation has been re-established.	**Level bust and collision avoidance** - any scenario where at least one aircraft comes into close proximity (below standard separation minimum) with another aircraft due to a level bust. The traffic could be head on with one aircraft climbing/descending, one aircraft catching up with another and one or both aircraft climbing/descending.	Manage a loss of separation situation	APS, ACS
			Airspace infringement - an aircraft enters controlled airspace without a clearance or radio communication. The path of the aircraft conflicts with other controlled aircraft in the airspace. The aircraft may transit the airspace or land at an aerodrome within the airspace.	Manage an airspace infringement situation	APS, ACS
			TCAS Resolution Advisory - aircraft reports responding to TCAS RA	Recover traffic situation after a TCAS RA	APS, ACS

	ATC Competencies									
Desired Outcomes	SITU	TRAF	SEPC	COMM	CORD	NONR	PROB	SELF	WORK	TEAM
Detects the possibility of a runway incursion and takes action	x	x								
Takes immediate action to resolve a runway incursion once it has occurred	x					x				
Offers any appropriate assistance						x				
Follows local procedures for dealing with runway excursions						x				
Manages traffic taking into account the closure of the affected runway	x	x				x				
Clears runway according to local instructions						x				
Coordinates with emergency services, as required					x					
Plans traffic taking into account potential go around manouevres and a blocked runway	x	x								
Requests technical assistance, if necessary and available						x				
Clears runway according to local instructions						x				
Coordinates with emergency services, as required					x					
Plans traffic taking into account potential go around manoeuvres and a blocked runway	x	x								
Requests technical assistance, if necessary and available						x				
Issues instructions that enable the flight crew to perform the published missed approach procedure										
Issues instructions to flight crew that would modify the execution of the published missed approach only when essential to maintain safety										
Folows local procedures for dealing with go-arounds										
Identifies that separation has been lost	x					x				
Issues appropriate collision avoidance instructions			x							
Communicates collision avoidance instructions is a clear manner, using correct phraseology and with an appropriate degree of urgency				x						
Issues follow-up instructions to normalise the traffic flow after separation has been re-established, if appropriate		x	x							
Identifies that an airspace infringement has taken place	x					x				
Issues appropriate instructions to other aircraft, including collision avoidance instructions, if necessary			x							
Attempts to establish identity of aircraft and intentions, using whatever means is available						x				
Coordinates with appropriate ATC units and other services, as required					x					
Follows correct procedures for responding to a TCAS RA						x				
Issues follow-up instructions to normalise the traffic flow after aircraft completion of RA manoeuvre, if appropriate		x	x							

APPENDIX 3 - EXAMPLES

Listed below are three examples of ways in which the scenarios can be combined and a syllabus created.

Example 1

A unit decides to concentrate on the topic 'Stabilised Approaches' for one of their refresher training sessions. They build practical exercises that give the controller an opportunity to analyse their competencies relating to speed instructions, distance to touchdown and late changes of runway. To reflect a more realistic operational environment, the exercise includes typical human factors issues such as designed distractions, interruptions and other changes in the normal operational environment.

The analysis is focussed on overall competence with special attention given to traffic sequencing skills and ensuring that controller actions do not impact on a flight crew's ability to stabilise their approach.

Syllabus

Subject: Refresher Training – Stabilised Approaches

1	Air Traffic Management
1.1	General Air Traffic Management
1.1.1	Maintain situational awareness
1.1.2	Ensure a safe, orderly and expeditious traffic flow
1.1.3	Manage potential traffic conflicts
1.1.4	Maintain separation
1.1.5	Communicate effectively
1.1.6	Provide information to flight crew
1.1.7	Implement solutions for any identified hazards and associated risks
1.1.8	Manage workload
1.2	Stabilised Approaches
1.2.1	Ensure that own actions do not contribute to a de-stabilised approach
1.2.2	Ensure effective and appropriate use of speed control techniques for approach sequencing purposes
1.2.3	Ensure effective and appropriate use of vectoring for approach sequencing purposes
1.2.4	Provide distance to touchdown information appropriately
1.2.5	Manage late changes of runway effectively

Example 2

A unit decides to concentrate on the topic 'Stabilised Approaches' and specifically the issues surrounding speed instructions. The unit wants to be sure that controllers' actions are not making it more difficult for a flight crew to stabilise their approach. Since the exercise has quite a narrow focus, they decide to also include some of the scenarios from the 'Communication Issues" topic as well, in this case, scenarios concerned with misunderstandings and radio discipline. So the exercise includes some planned miscommunications (initiated by pseudo-pilots or other controllers and/or supervisors etc.), incomplete read backs and distractions whilst listening to read backs. To reflect a more realistic operational environment, the exercise includes designed distractions, interruptions and other changes in the normal operational environment.

The analysis is focussed on overall competence with special attention given to effective sequencing using speed control techniques and the ability to deal with misunderstandings. In addition there is a detailed analysis of the radio discipline aimed at 'perfecting' RT communications.

Syllabus

Subject: Refresher Training – Stabilised Approaches and Communication

1	**Air Traffic Management**
1.1	**General Air Traffic Management**
1.1.1	Maintain situational awareness
1.1.2	Ensure a safe, orderly and expeditious traffic flow
1.1.3	Manage potential traffic conflicts
1.1.4	Maintain separation
1.1.5	Implement solutions for any identified hazards and associated risks
1.1.6	Manage workload
1.2	**Stabilised Approaches**
1.2.1	Ensure that own actions do not contribute to a de-stabilised approach
1.2.2	Ensure effective and appropriate use of speed control techniques for approach sequencing purposes
2	**Communication**
2.1	**Misunderstandings**
2.1.1	Manage communication misunderstandings effectively
2.2	**Radio Discipline**
2.2.1	Use appropriate radio telephony phraseology
2.2.2	Apply correct radio communication techniques

Example 3

A unit decides to concentrate exclusively on the topic 'Communication Issues' for one of their refresher training sessions. They build practical exercises that include instances of partial and complete loss of radio communication, designed misunderstanding initiated by pseudo-pilots, other controllers and/or supervisors, pseudo-pilots who have limited language ability and flights with callsigns that are likely to lead to callsign confusion. To reflect a more realistic operational environment, the exercise includes typical human factors issues such as designed distractions, interruptions and other changes in the normal operational environment.

The analysis is focussed on overall competence with detailed attention given to 'perfecting' overall communication skills.

Syllabus

Subject: Refresher Training – Stabilised Approaches and Communication

1	**Air Traffic Management**
1.1	**General Air Traffic Management**
1.1.1	Maintain situational awareness
1.1.2	Ensure a safe, orderly and expeditious traffic flow
1.1.3	Manage potential traffic conflicts and maintain separation
1.1.4	Maintain separation
1.1.5	Provide information to flight crew
1.1.6	Implement solutions for any identified hazards and associated risks
1.1.7	Manage workload
1.1.8	Manage coordination
1.1.9	Manage abnormal situations
1.1.10	Operate as a team member
2	**Communication**
2.1	**Communications Failure**
2.1.1	Manage a complete loss of an aircraft radio communication failure effectively
2.1.2	Manage a partial loss of an aircraft radio communication failure effectively
2.2	**Radio Discipline**
2.2.1	Uses appropriate radio telephony phraseology
2.2.2	Applies correct radio communication techniques
2.3	**Misunderstandings**
2.3.1	Manage communication misunderstandings effectively
2.4	**Callsign confusion**
2.4.1	Manage callsign confusion issues

APPENDIX 4 - ANALYSIS SHEET

The following is an analysis sheet for Example 2 described in Appendix 3.

1	**Air Traffic Management**	
1.1	**General Air Traffic Management**	
1.1.1	Situational awareness	• Monitors air traffic in own area of responsibility and nearby airspaces
		• Integrates information obtained from monitoring and scanning into overall picture
		• Analyses the actual situation based on information obtained from monitoring and scanning
		• Interprets the situation based on the analysis
		• Predicts the future operation situation
Points to note:		
1.1.2	Traffic and capacity management	• Manages arriving traffic using prescribed procedures
		• Takes aircraft performance into account when issuing clearances and instructions
		• Reacts appropriately to situations that have the potential to become unsafe
		• Issues clearances and instructions to flight crew that result in an economic and efficient traffic flow
		• Issues clearances and instructions in a timely manner
Points to note:		
1.1.3 + 1.1.4	Separation and conflict resolution	• Identifies traffic conflicts
		• Selects the most appropriate separation method
		• Applies appropriate air traffic separation and spacing
		• Issues clearances and instructions to the flight crew that ensure separation is maintained
		• Issues clearances and instructions the flight crew that take into account aircraft performance, terrain obstacles, airspace constraints and weathe
		• Issues clearance and instructions the flight crew that resolve traffic conflicts
		• Monitors the execution of separation actions
		• Adjusts control actions, as necessary, to maintain separation
Points to note:		

1.1.5	Problem solving and decision-making	• Takes into account the existing rules and operating procedures when determining possible solutions to a problem
		• Implements a chosen solution to a problem
		• Perseveres in working through problems without reducing safety
		• Interprets the situation based on the analysis
		• Predicts the future operation situation
Points to note:		
1.1.7	Workload management	• Manages arriving traffic using prescribed procedures
		• Takes aircraft performance into account when issuing clearances and instructions
		• Reacts appropriately to situations that have the potential to become unsafe
		• Issues clearances and instructions to flight crew that result in an economic and efficient traffic flow
		• Issues clearances and instructions in a timely manner
Points to note:		
1.2	**Stabilised Approaches**	
1.2.1	Ensure that own actions do not contribute to a de-stabilised approach	• Issues speed instructions that are appropriate for the aircraft type and its position in relation to the final approach trac
		• Avoids issuing instructions that include both a descent clearance and a speed reduction
1.2.2	Ensure effective and appropriate use of speed control techniques for approach sequencing purposes	• Recognises traffic situations where speed restrictions are having an impact on the flight crew ability to stabilise their approachg
		• Cancel speed restrictions at a time that will enable the flight crew to stabilise their approach
Points to note:		

2	Communication	
2.1	**Misunderstandings**	
2.1.1	Manage communication misunderstandings effectivelymcarpent	• Recognise that a misunderstanding may have occurred
		• Takes action to clarify if a misunderstanding has occurred
		• Correct misunderstandings, when applicable
		• Manages any consequences of the misunderstanding
		• Takes extra care when language difficulties are apparent
Points to note:		
2.2	**Radio Discipline**	
2.2.1	Use appropriate radio telephony phraseology	• Uses clear and unambiguous phraseology at all times
		• Use standard RT phraseology, when prescribed
2.2.2	Apply correct radio communication techniques	• Insists on complete readbacks of clearances and instructions from pilots at all times
		• Corrects any error in read-back and insist on further read-back until certain that the clearance has been correctly copied
		• Issues conditional clearances that are correct and complete
		• Avoids distractions when listening to readbacks
		• Avoids issuing more than two instructions in the same transmission
		• Uses standard coordination phraseology, when prescribed
		• Does not pass RTF frequency changes as part of a multi-part clearance
Points to note:		

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