Aerodrome Flight Information Radar Endorsement

AFI/RAD

Module 11

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EXECUTIVE SUMMARY

Phase II – Rating and endorsement specialised training Module 11 provides the Common Core Content for **Aerodrome Flight Information Radar Endorsement** training.

The content of the rating training course is based on the assumption that the student has successfully completed the Phase I – Basic ATS Training, Common Core Content Objectives as a prerequisite.
It has been derived by building on the Phase I Basic ATS Training Common Core Content, and on Phase II – Rating and endorsement specialised training Module 10. A copy of this, together with a list of action verbs used, are contained the Danish CAA ATS Initial Training – BASIC ATS TRAINING.

Following the tabulated format of the Phase I Common Core Content, the **Aerodrome Flight Information Radar Endorsement** training common core content has been subdivided into subjects:

1. Introduction to the Course (INTR);
2. Aviation Law (LAW);
3. Air Traffic Management (ATM);
4. Meteorology (MET);
5. Navigation (NAV);
6. Aircraft (ACFT);
7. Human Factors (HUM);
8. Equipment and Systems (EQPM);
9. Professional Environment (PENV);
10. Unusual/Emergency Situations (UNES);
11. Degraded Systems Capability (DEGS);
12. Aerodromes (AGA).

The order of the subjects and objectives is neither intended to convey a pedagogical sequence nor to indicate a relative level of importance.

The training designer will need to know that the student has successfully completed the Phase I Course and the Phase II – Rating and endorsement specialised training Module 10. The design of the **Aerodrome Flight Information Radar Endorsement** course can now be based on the combination of:
Phase I – Basic ATS training,
Phase II – Rating and endorsement specialised training Module 10, and
Phase II – Rating and endorsement specialised training Module 11.

Minimum time spend

Lecturing	20 hours *
Simulator training	15 hours per student *

* if converting/extending from ATC with Radar endorsement to FIS licence the required lecturing time may be halved and the required simulator time may be reduced subject to the CTI assessment but not less than 75%.

Examination/Assessment
Summative assessment in the simulator.
Daily logs on debriefing.
Assessment report for every 5 hours.

Theoretical test:

Time available	60 mins
Questions	40
Pass mark	75%

Facilities English - Danish dictionary

Distribution of Questions:

CQB Module 11	Amount of questions
Subject 01	
11 01 01 01	
11 01 01 02	
11 01 01 03	
11 01 02 01	
11 01 02 02	
11 01 02 03	
Total Subject 01	0

Subject 02	
11 02 01 01	
11 02 01 02	
11 02 01 03	
11 02 01 03	
11 02 02 01	
Total Subject 02	4

Subject 03	
11 03 01 01	
11 03 01 02	
11 03 01 03	
11 03 01 04	
11 03 02 01	
11 03 03 01	
11 03 03 02	
11 03 04 01	
11 03 05 01	
11 03 06 01	
11 03 07 01	
11 03 07 02	
11 03 08 01	
11 03 08 02	
11 03 08 03	
11 03 09 01	
11 03 09 02	
11 03 09 03	
11 03 09 04	
11 03 09 05	
11 03 09 06	
Total Subject 03	26

CQB Module 11	Amount of questions
Subject 04	
Not applicable	
Total Subject 04	0

Subject 05	
11 05 01 01	
Total Subject 05	1

Subject 06	
11 06 01 01	
Total Subject 06	1

Subject 07	
Not applicable	
Total Subject 07	0

Subject 08	
11 08 01 01	
11 08 02 01	
11 08 02 02	
Total Subject 08	2

Subject 09	
Not applicable	
Total Subject 09	0

Subject 10	
11 10 01 01	
11 10 01 02	
11 10 01 03	
11 10 01 04	
Total Subject 10	4

Subject 11	
11 11 01 01	
11 11 02 01	
Total Subejct 11	2

Subject 12	
Not applicable	
Total Subject 12	0

Total Module 11	40

SUBJECT 1: INTRODUCTION TO THE COURSE

The general objective is:
Students shall know and understand the training programme that they will follow during the institutional rating training.

TOPIC / SUBTOPIC	**OBJECTIVES** Students shall	**L**	**CONTENT**
1. COURSE MANAGEMENT Students shall explain the aims and objectives of the course, the management structure and recognise the materials to be used.			
1.1. Course Introduction	1.1.1. Explain the aims and main objectives of the course	2	Course objectives for the specific rating/endorsement
1.2. Course Administration	1.2.1. Name the course leader and principal instructors	1	
1.3. Study Material and Training Documentation	1.3.1. Choose appropriate documentation for course studies	3	Library; CBT library
	1.3.2. Integrate appropriate documentation into the course	4	Library; CBT library
2. INTRODUCTION TO THE ATC TRAINING COURSE Students shall state the methodology and describe the assessment procedures used in the course.			
2.1. Course Content	2.1.1. State the different methods of teaching the subjects	1	Theoretical training; Practical training; Self-study; taxonomy; Action verbs
	2.1.2. Describe, in general terms, the content of the subjects	2	
	2.1.3. Describe the organisation of the theoretical training	2	
	2.1.4. Describe the organisation of the simulation training	2	Structure of participation; Simulation exercises; Briefing; Debriefing
2.2. Training Ethos	2.2.1. Recognise the feedback mechanisms available	1	Instructor discussions; Training progress; Assessment; Results; Briefing; Debriefing
	2.2.2. Describe the positive effect in working together with fellow course participants	2	How the influence of interactive studies can lead to success
2.3. The Assessment Process	2.3.1. Describe the assessment procedure	2	The assessment process applied during the course and associated re-sit procedures

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SUBJECT 2: AVIATION LAW

The general objective is:
Students shall:
i. appreciate the principles of Aviation Law;
ii. know, understand and apply the Rules of the Air and the Regulations, appropriate to aerodrome flight information service with radar;
iii. appreciate the authority vested in the operator and the means by which that authority is exercised.

TOPIC / SUBTOPIC	**OBJECTIVES** Students shall	**L**	**CONTENT**
1. RULES AND REGULATIONS Students shall explain and apply the Rules and Regulations which affect ATS operations.			
1.1. Airspace	1.1.1. Appreciate the structure of airspace and its relevance to the aerodrome flight information service radar endorsement	3	ICAO ANNEX 2; National requirements (AIP); International Requirements; Civil requirements; Military requirements; Areas of responsibility; Sectorisation; Airspace structure
	1.1.2 Provide actions appropriate to aerodrome flight information radar service	4	ICAO; National requirements; International requirements; Civil requirements; Military require-ments; Areas of responsibility; Sectorisation; Airspace structure
1.2. Rules of the Air	1.2.1. Provide actions appropriate to the rules for minimum safe height and terrain clearance and unauthorised penetration of airspace	4	Responsibility for terrain clearance; Terrain clearance dimensions; Minimum safe altitudes; Safe sectors; Minimum flight levels
1.3. National Legislation and Procedures	1.3.1. Describe the methods by which national regulations are implemented in the aerodrome flight information service radar endorsement	2	National Regulations and Requirements
1.4. Special National Legislation and Procedures	1.4.1. Provide planning, co-ordination and actions in accordance with special national legislation and procedures related to aerodrome flight information radar service	4	e.g. Security; Environmental (noise abatement, conservation areas, fuel jettisoning); Sensitive areas (hospitals, VIP residences); Priority allocation; Special purpose codes
2. FIS LICENSING Students shall appreciate the legal aspects associated with the FIS Licence			
2.1. Privileges and Conditions	2.1.1. Describe the conditions which must be met for the issue and maintenance of the aerodrome flight information service radar (AFI/RAD) endorsement	2	BL 6-71
	2.1.2. Describe the privileges associated with the aerodrome flight information service radar (AFI/RAD) endorsement	2	

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SUBJECT 3: AIR TRAFFIC MANAGEMENT

The general objective is:
Students shall apply operational procedures to ensure a safe, orderly and expeditious service.

TOPIC / SUBTOPIC	**OBJECTIVES** Students shall	**L**	**CONTENT**
1. AIR TRAFFIC SERVICES AND AIRSPACE MANAGEMENT Students shall provide the appropriate aerodrome flight information radar service.			
1.1. Aerodrome flight information Radar Service	1.1.1 Provide the appropriate aerodrome flight information radar service	4	ICAO; National documentation; Local procedures
1.2. Flight Information Service (FIS)	1.2.1. Use radar for the provision of FIS	3	ICAO Doc 4444; Information to identified aircraft concerning traffic, weather, navigation
1.3. Alerting Service	1.3.1. Provide appropriate action in abnormal situations using radar derived information	4	Responses to distress and urgency messages and signals
1.4. Air Traffic Flow Management (ATFM)	1.4.1. Organise traffic flows and patterns to take account of airspace boundaries	4	Civil and Military; Controlled; Uncontrolled; Advisory; Restricted; Danger; Prohibited; Special rules; Sector boundaries; National boundaries; FIR boundaries; Delegated airspace; Transfer of control; Transfer of communications
	1.4.2. Organise traffic flows and patterns to take account of radar coverage	4	National Procedures
	1.4.3. Organise traffic flows and patterns to take account of areas of responsibility	4	National Procedures
	1.4.4. Inform supervisor of situation	3	e.g. Abnormal situations; Decrease in sector capacity; Limitations on systems and equipment; Changes in workload/ capacity; Relevant information (e.g. reported ground-based Incidents, forest fire, smoke, oil pollution); Unusual meteorological Conditions
	1.4.5. Apply flow management procedures	3	Slot allocation Procedures

TOPIC / SUBTOPIC	**OBJECTIVES** Students shall	**L**	**CONTENT**
2. COMMUNICATION Students shall appreciate the necessity for effective communication and shall use approved phraseology.			
2.1. Effective Communication	2.1.1. Use ICAO approved radar information phraseology	3	ICAO Doc 4444 Part 10; ICAO Doc 9432; ICAO ANNEX 10 Chapter 5
	2.1.2. Analyse examples of pilot and controller communication for effectiveness	4	
	2.1.3. Interpret the rules to provide an effective service where approved phraseology is not available	5	Receiver only; Transmitter only; Speechless aircraft; Incomplete messages
3. ATC CLEARANCES AND INSTRUCTIONS Students shall issue appropriate clearances and instructions.			
3.1. ATC Clearances	3.1.1. Relay appropriate ATC clearances	4	e.g. Climb; Joining; En-route
3.2. ATC Instructions	3.2.1. Relay appropriate ATC instructions	4	e.g. SSR Code
4. ALTIMETRY AND LEVEL ALLOCATION Students shall ensure correct altimeter setting for aircraft.			
4.1. Mode C	4.1.1. Ensure correct mode C response	4	e.g. Radar vectoring area; Lowest available flight level; Minimum safe altitude; Minimum Sector Altitude (MSA)
5. SEPARATION STANDARDS Students shall select and inform aircraft about appropriate separation.			
5.1. Wake Turbulence Radar Separation	5.1.1. Provide information relevant to wake turbulence radar separation	4	
6. DATA AND TRAFFIC Students shall analyse all displayed data, including traffic, in order to manage air traffic.			
6.1. Data Management	6.1.1. Update the traffic display to accurately reflect the situation	3	Information displayed; Strip marking procedures; Actions based on traffic display information; Calculation of EETs
	6.1.2. Analyse pertinent data on traffic display	4	
	6.1.3. Organise pertinent data on traffic display	4	

TOPIC / SUBTOPIC	**OBJECTIVES** Students shall	**L**	**CONTENT**
7. OPERATIONAL ENVIRONMENT Students shall recognise and maintain the integrity of the simulated operational environment.			
7.1. Integrity of the Operational Environment	7.1.1. Obtain information concerning the operational environment	3	e.g. Briefing; Takeover; Notices; Local orders; Verify information
	7.1.2. Check and maintain the integrity of the operational environment	3	e.g. Integrity of displays; Verify the information provided by displays; Controller working position (CWP)
	7.1.3. Inform the relieving controller of the operational environment	3	e.g. Briefing; Handover; Notices; Local orders; Verify information
7.2. Verification of the Currency of Operational Procedures	7.2.1. Check all relevant documentation before managing traffic	3	e.g. Briefing; NOTAM; AICs; LOAs
	7.2.2. Apply the procedural changes while managing traffic	3	
8. PROVISION OF AN AERODROME FLIGHT INFORMATION SERVICE - RADAR Students shall provide an appropriate flight information service, applicable to the aerodrome flight information service radar endorsement.			
8.1. General	8.1.1. Describe the division of responsibility between ATS units	2	ICAO Doc 4444; National requirements
	8.1.2. Describe the responsibility in regard to military traffic	2	ICAO Doc 4444; National requirements
8.2. Aerodrome Radar	8.2.1. Explain the responsibility for the provision of an aerodrome flight information service using radar derived information	2	Functions listed in ICAO Doc 4444 and/or Local Operational procedures
	8.2.2. Explain the functions that can be performed with the use of radar derived information in the provision of an aerodrome flight information service	2	Holding; Approach procedures; Missed approach procedures; Sequencing; Arriving traffic; Departing traffic; Transit traffic, EATs
8.3 Radar service provided	8.3.1. Appreciate action taken when identified IFR flights in uncontrolled airspace constitute a collision hazard to other aircraft	3	ICAO doc 4444, chapter 8
	8.3.2. Apply collision hazard information to aircraft in uncontrolled airspace	3	ICAO doc 4444, chapter 8

TOPIC / SUBTOPIC	**OBJECTIVES** Students shall	**L**	**CONTENT**
9. RADAR IDENTIFICATION Students shall: i. establish and maintain radar identification; ii. respond to a loss of radar identification.			
9.1. Establishment of Radar Identification	9.1.1. Apply the methods of establishing radar identification using primary radar	3	ICAO Doc 4444
	9.1.2. Appreciate the precautions when establishing radar identification using primary radar	3	ICAO Doc 4444
	9.1.3. Apply methods of establishing radar identification using secondary radar	3	ICAO Doc 4444
	9.1.4. Appreciate the precautions when establishing radar identification using secondary radar	3	ICAO Doc 4444
	9.1.5. Apply procedures in the case of misidentification	3	ICAO Doc 4444
9.2. Maintenance of Radar Identification	9.2.1. Appreciate the necessity to maintain radar identification at all times	3	
9.3. Loss of Radar Identity	9.3.1. Recognise when an aircraft identification is lost or in doubt	1	e.g. Out of radar coverage; Loss of radar service; Weather clutter; Other clutter; Garbling
	9.3.2. Apply methods to re-establish radar identification	3	
	9.3.3. Respond to loss/doubt concerning radar identification	3	Non-radar procedures
9.4. Position Information	9.4.1. Appreciate the circumstances when radar position information should be passed to the aircraft	3	ICAO Doc 4444
9.5. Transfer of Identity	9.5.1. Apply the methods of transfer of radar identification	3	ICAO Doc 4444
	9.5.2. Appreciate the precautions when transferring radar identification	3	
9.6 Termination of radar service	9.6.1. Appreciate the procedures applied when terminating radar service	3	ICAO doc 4444 chapter 8
	9.6.2. Apply the procedures for termination of radar service	3	

SUBJECT 4: METEOROLOGY

Covered in Phase II – Rating and endorsement specialised training Module 10

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SUBJECT 5: NAVIGATION

The general objective is:
Students shall analyse all local Navigational aspects in order to organise the aerodrome traffic.

TOPIC / SUBTOPIC	**OBJECTIVES** Students shall	**L**	**CONTENT**
1. NAVIGATIONAL ASSISTANCE Students shall appreciate the information on maps and charts and integrate this into control decisions.			
1.1. Maps and Charts	1.1.1. Decode symbols and information found on relevant aeronautical maps and charts	3	Visual and instrument charts; Aerodrome charts; National maps and charts; Military maps and charts
	1.1.2. Use relevant maps and charts	3	Nearest most suitable aerodrome; Track, Heading; Distance; Aerodrome information; Any other navigational Assistance relevant at the time
	1.1.3. Assist aircraft observed to be deviating from its known intended route	3	

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SUBJECT 6: AIRCRAFT

The general objective is:
Students shall assess Aircraft performance to integrate it into traffic organisation.

TOPIC / SUBTOPIC	**OBJECTIVES** Students shall	**L**	**CONTENT**
1. AIRCRAFT DATA Students shall: i. use the standard average performance data for the provision of aerodrome flight information radar service; ii. recognise potential or actual emergency situations; iii. apply standard solutions in the case of simple situations.			
1.1. Performance Data	1.1.1. Integrate radar derived observation of aircraft performance control into action decisions	4	e.g. Rate of climb/descent; Speed; Radius of turn

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SUBJECT 7: HUMAN FACTORS

Covered in Phase II – Rating and endorsement specialised training Module 10

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SUBJECT 8: EQUIPMENT AND SYSTEMS

The general objective is:
Students shall:
integrate knowledge and understanding of the working principles of Equipment and Systems in the provision of an aerodrome flight information radar service.

TOPIC / SUBTOPIC	**OBJECTIVES** Students shall	**L**	**CONTENT**
1. GENERAL			
1.1. ATC Equipment	1.1.1. Maintain the technical integrity of the operational position	3	Notification procedures; Responsibilities
	1.1.2. Operate the various items of equipment in the simulator	3	e.g. Electronic information displays; Radar display; Flight progress board (strip display); Meaning of colours
	1.1.3. Operate all available equipment in abnormal situations	3	
2. RADAR Students shall use the radar equipment.			
2.1. Use of Radar	2.1.1. Operate radar equipment	4	Switch on and adjust settings in accordance with local instructions
	2.1.2. Operate appropriate anticlutter devices	3	In accordance with Local instructions: Weather clutter; Permanent echoes; Unwanted targets
	2.1.3. Analyse the information provided by the radar equipment	4	Including: use, advantages, limitations
	2.1.4. Take account of the limitations of systems and equipment	2	
2.2. Secondary Radar	2.2.1. Explain code management	2	Normal codes; Special codes; International; National; Local
	2.2.2. Allocate codes	4	

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SUBJECT 9: PROFESSIONAL ENVIRONMENT

Covered in Phase II – Rating and endorsement specialised training Module 10

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SUBJECT 10: UNUSUAL/EMERGENCY SITUATIONS

The general objective is:
Students shall manage air traffic in Unusual/Emergency situations.

TOPIC / SUBTOPIC	**OBJECTIVES** Students shall	**L**	**CONTENT**
1. GENERAL			
1.1. Unknown Traffic	1.1.1. Apply the procedures in the case of unknown traffic	3	Inside controlled airspace; Outside controlled airspace; IFR Vs VFR
1.2. Radar Guidance Outside Controlled Airspace	1.2.1. Explain the circumstances which may require aircraft to be guided outside controlled airspace	2	e.g. Weather avoidance; Emergency; Traffic Avoidance
	1.2.2. Apply procedures regarding guidance outside controlled airspace	3	e.g. Co-ordination; Information to aircraft
1.3. Transponder Failure	1.3.1. Apply procedures in the event of a SSR transponder failure	3	e.g. Total; Partial; National regulations; ICAO Doc 4444; ICAO Doc 7030
1.4. Radio Failure	1.4.1. Apply procedures when a radar controller experiences complete or partial failure of ground radio communication equipment	3	ICAO Doc 4444; ICAO Doc 7030
	1.4.2. Explain the procedures followed by a pilot when he experiences complete or partial radio failure	2	e.g. Civil; Military; Special National procedures
	1.4.3. Apply ATS procedures associated with a pilot experiencing complete or partial radio failure	3	e.g. Civil; Military; Special National procedures

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SUBJECT 11: DEGRADED SYSTEMS CAPABILITY

The general objective is:
Students shall integrate System Degradation procedures in the management of air traffic.

TOPIC / SUBTOPIC	**OBJECTIVES** Students shall	**L**	**CONTENT**
1. SURVEILLANCE EQUIPMENT Students shall respond to degradation of surveillance equipment.			
1.1. Partial or Total Degradation	1.1.1. Recognise that surveillance equipment has degraded	1	Partial power failure; Loss of certain facilities; Total failure
	1.1.2. Integrate remedial procedures and/or techniques	3	e.g. Inform adjacent sectors; Inform aircraft; Reduce the number of aircraft entering area of responsibility; Transfer aircraft to another unit
2. RADAR PROCESSING SYSTEMS Students shall respond to degradation in the processing systems associated with the surveillance equipment.			
2.1. ATC Processing System Degradation	2.1.1. Recognise a system degradation	1	e.g. FPS; RDPS; Software processing of surveillance display
	2.1.2. Integrate appropriate procedure following a processing system degradation	3	e.g. National procedures; Local unit procedures

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SUBJECT 12: AERODROMES

Covered in Phase II – Rating and endorsement specialised training Module 10

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