



International Civil Aviation Organization

The Fifth Meeting of ICAO Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG/5)

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ATFM/SG/5–WP/10
30/03/2015 - 03/04/2015

Agenda Item 5: Development of Regional ATFM Framework

CURRICULUM / SYLLABUS FOR FMP

(Presented by INDONESIA)

SUMMARY

This paper presents a set of plans that contains an outline or learning issues that include competence standard, basic competence, learning materials, indicators, assessment, allocation of time, and learning resources developed by any educational institution in the country. Curriculum / syllabus is built and developed with the aim to prepare the implementation of Air Traffic Flow Management both domestically and regionally.

1. INTRODUCTION

1.1 The purpose of this paper is to inform the state of readiness of Indonesia to ensure the timely completion of the planning, procurement and allocation of resources to enable participation in the pilot program ATFM operational multi-nodal and Implement cross-border ATFM according to the performance objectives of Regional Collaboration Framework ATFM.

1.2 Participation and readiness of Indonesia in the pilot program ATFM operational multi-nodal and implementation of cross-border ATFM can be seen from the manufacture of a set of plans that contains an outline or learning issues that include competence standard, basic competence, learning materials, indicators, assessment, allocation of time , and learning resources developed by each educational unit.

1.3 Syllabus as the principal source in the preparation of lesson plans for one of the standards of competence and basic competences, as a measure in assessing the success of a program of learning and accountability as written documentation as a learning program

2. DISCUSSION

Curriculum / Syllabus

2.1 Document reference for establishment curriculum for FMP :

- a. Doc. 9971 Part I
- b. Doc. 9971 Part II
- c. Annex 3, Meteorological Service for International Air Navigation
- d. Annex 11, Air Traffic Services
- e. Worldwide Slot Guidelines 4th edition

- f. Worldwide Scheduling Guidelines 19th edition
- g. IATA World Slot Guidance (IATA WSG)

2.2 Curriculum / Syllabus for ATFM in Indonesia are appended to this paper as **Attachment A**, in order to reach the following competency levels:

- Level 0 (zero) - Awareness;
- Level 1 - A **basic knowledge** of the subject. It is the ability to remember essential points, to memorize data and retrieve it;
- Level 2 – The ability to understand and to discuss the subject matter **intelligently** in order to represent and act upon certain objects and events;
- Level 3 – A thorough knowledge of the subject and the ability to apply it with accuracy. The ability to make use of the repertoire of knowledge to develop plans and activate them;
- Level 4 – The ability to establish a line of action within a unit of known applications following the correct chronology and the adequate method to resolve a problem situation. This involves the integration of known applications in a familiar situation; and
- Level 5 - The ability to analyse new situations in order to elaborate and apply one or other relevant strategy to solve a complex problem. The defining feature is that the situation is qualitatively different to those previous.

Instructor Requirement

2.3 **Table 1** will set out the teaching staff requirement in accordance with the level of training ATFM/CDM.

Level	Teaching Staff Training Requirement
Level 0	ATS Training
Level 1	(to be discuss)
Level 2	(to be discuss)
Level 3	(to be discuss)
Level 4	(to be discuss)
Level 5	(to be discuss)

Table 1: ATFM Teach Staff Training Requirement

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Note the information contained in this paper;
- b) discuss any comment and suggestion for the material at level of compliance; and
- c) discuss any comment and suggestion for the teaching staff training requirement.

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ATTACHMENT A – Training Curriculum / Syllabus for 5 Levels of ATFM/CDM Competency

LEVEL 0

Level 0 (zero)					
NO	SUBJECTS	MATTER	SUB MATTER	HOURS	
				T	P
1.	Translation of Training Programs	1. Introduction Program Training 2. Provisions for the implementation of education and training	a. Introductions among participants and facilitators b. Concept Program c. Training Objectives d. Description Training e. Training Implementation Structure a. The provisions for the implementation of the training (schedule, implementation in the classroom, meals, accommodation, etc.) b. Evaluation Implementation Plan	2	-
2.	Air Traffic Service Knowledge	1. Organization and Services Airspace 2. IATA and ICAO Code 3. The Air Navigation Aids (General)	a. FIR b. ACC c. APP d. ADC e. ATS Reporting Office a. Introduction ICAO, FAA, Eurocontrol and DGCA b. Code and Abbreviation c. ICAO Alphabet d. Letter Code: a. Airlines (IATA/ICAO) b. Airport (IATA/ICAO) e. Aircraft Type Designator a. Types of Air Navigation Aids b. Ground Base Nav Aids c. Satellite Base Nav Aids	4	-
3.	Airlines Operation Knowledge	1. Introduction 2. Aircraft Knowledge	a. Airlines Business Process b. Preparation Before Departure c. In Flight Supervision d. Post Operation Report a. Types of Aircraft b. Category Aircraft	4	-

Level 0 (zero)					
NO	SUBJECTS	MATTER	SUB MATTER	HOURS	
				T	P
4.	Airport Operation Knowledge	1. Introduction Airport Operation 2. Airport Facilities 3. Physical Characteristics Aerodrome 4. The introduction of Flight Operations Safety Zone (FOSZ)	a. Airport Business Process b. Stakeholder Involve in Airport Operation a. Check In and Passenger Facility b. Facilitation (Custom Immigration Quarantine) a. Runway (shoulder, turn pads, strips, RESA) b. Clearways c. Stopways d. Taxiway (shoulder, strips) e. Apron a. General b. Obstacle Limitation Surface c. Obstacle Chart	4	-
5.	Flight Approval	Introduction of Flight Approval	a. Mechanism of Flight Approval b. Regulation Related of Flight Approval	2	-
6.	General Aviation Meteorology	Meteorological Condition	a. Visual Meteorological Condition (VMC) b. Instrument Meteorological Condition (IMC)	1	-
7.	Air Traffic Flow Management (ATFM)	Introduction	a. ATFM Philosophy b. ATFM Objectives and Principles c. ATFM Benefits	2	-
8.	ATFM Service	1. ATFM service operate 2. Introduction of Collaborative decision-making (CDM)	How does an ATFM service operate a. Definition b. Stakeholder Involve	2	-
9.	Capacity, Demand And ATFM Phases	1. Capacity and Demand 2. ATFM Phases	a. Introduction b. Airport Capacity c. Sector Capacity d. ATC Capacity e. Demand a. Strategic b. Pre-Tactical c. Tactical	4	-
10.	ATFM Data Sharing	ATFM Media Data Sharing	1. ATFM Web Pages 2. ATFM Terminology	1	-
11.	Study Visit			-	8
AMOUNT				26	8
TOTAL				34 TH	

Note : T = Theory, P = Practice, TH = Training Hour (45 min/TH)

LEVEL 1

Level 1					
A basic knowledge of the subject. It is the ability to remember essential points, to memorize data and retrieve it.					
NO	SUBJECTS	MATTER	SUB MATTER	HOURS	
				T	P
1.	Translation of Training Programs	1. Introduction Program Training 2. Provisions for the implementation of education and training	a. Introductions among participants and facilitators b. Concept Program c. Training Objectives d. Description Training e. Training Implementation Structure a. The provisions for the implementation of the training (schedule, implementation in the classroom, meals, accommodation, etc.) b. Evaluation Implementation Plan	2	-
2.	Slot Management	1. National Regulation 2. Flight Approval 3. IATA Level Airport	a. Regulations on the mechanism of Permit Fly and Slot Time b. Security Clearance c. Diplomatic Clearance d. Flight Permit a. Mechanisme of Flight Approval b. Regulation Related of Flight Approval c. Stakeholder Involve a. Level 1 Airport b. Level 2 Airport c. Level 3 Airport	12	-
3.	Air Traffic Service Knowledge	Organization and Services Airspace	a. ADC b. APP c. ACC d. FIR e. ATS Reporting Office	4	-
4.	Airlines Operation Knowledge	Airlines Operation	a. Airline Business Process b. Preparation Before Departure c. In Flight Supervision d. Post Operation Report	4	-

Level 1					
A basic knowledge of the subject. It is the ability to remember essential points, to memorize data and retrieve it.					
NO	SUBJECTS	MATTER	SUB MATTER	HOURS	
				T	P
5.	Airport Operation Knowledge	1. Introduction Airport Operation 2. Airport Facilities 3. Physical Characteristics Aerodrome	a. Airport Business Process b. Stakeholder Involve in Airport Operation a. Check In and Passenger Facility b. Facilitation (Custom Immigration Quarantine) a. Runway (shoulder, turn pads, strips, RESA) b. Clearways c. Stopways d. Taxiway (shoulder, strips) e. Apron	4	-
6.	General Aviation Meteorology	1. QAM or <i>Weather Report</i> 2. Meteorologi announcement	a. Wind b. Visibility c. Cloud d. Present Weather e. Air pressure f. Air Temperature a. METAR b. SPECI c. ROFOR d. TAFOR	4	-
7.	Air Traffic Flow Management (ATFM)	Introduction ATFM	a. ATFM Philosophy b. ATFM Objectives and Principles c. ATFM Benefits	4	-
8.	ATFM Service	1. ATFM service operate 2. Collaborative decision-making (CDM)	How does an ATFM service operate a. Collaborative decision-making (CDM) in the context of ATFM b. CDM Deployment c. CDM Requirements and Benefits d. ATFM, CDM, and Civil/Military Coordination	10	-
9.	Capacity, Demand And ATFM Phases	1. Capacity and Demand 2. ATFM Phases	a. Introduction b. Airport Capacity c. Sector Capacity d. ATC Capacity e. Demand a. Strategic b. Pre-Tactical c. Tactical	4	-
10.	ATFM Measures	Introduction of ATFM Measures	What are ATFM Measures and how are they established and	2	-

Level 1					
A basic knowledge of the subject. It is the ability to remember essential points, to memorize data and retrieve it.					
NO	SUBJECTS	MATTER	SUB MATTER	HOURS	
				T	P
			applied		
11.	Data Exchange	Introduction of Data Exchange in ATFM	1. What data and information are exchanged in an ATFM service 2. Benefits of Data Exchange 3. International Data Exchange Specifications	2	2
12.	Study Visit			-	8
13.	Exam/Evaluation			2	-
AMOUNT				54	10
TOTAL				64 TH	

Note : T = Theory, P = Practice, TH = Training Hour (45 min/TH)

LEVEL 2

Level 2					
The ability to understand and to discuss the subject matter intelligently in order to represent and act upon certain objects and events.					
NO	SUBJECTS	MATTER	SUB MATTER	HOURS	
				T	P
1.	Translation of Training Programs	1. Introduction Program Training 2. Provisions for the implementation of education and training	a. Introductions among participants and facilitators b. Concept Program c. Training Objectives d. Description Training e. Training Implementation Structure a. The provisions for the implementation of the training (schedule, implementation in the classroom, meals, accommodation, etc.) b. Evaluation Implementation Plan	2	-

Level 2					
The ability to understand and to discuss the subject matter intelligently in order to represent and act upon certain objects and events.					
NO	SUBJECTS	MATTER	SUB MATTER	HOURS	
				T	P
2.	Aviation Meteorology	1. Meteorology 2. Weather Phenomena	a. METAR b. SPECI c. ROFOR d. TAFOR a. Microbrust b. Jetstream c. Cumulunimbus d. Windshear e. Clear air turbulence f. Thyphoon g. Tornado	4	-
3.	Air Traffic Flow Management (ATFM)	ATFM/CDM Operation Concept	a. ATFM/CDM Function and Procedure b. Network Operation c. ATFM Phases	8	-
4.	ATFM Service	1. ATFM service operate 2. Collaborative decision-making (CDM) Introduction	Establishment ATFM Service a. Collaborative decision-making (CDM) in the context of ATFM b. CDM Requirements and Benefits c. CDM Deployment d. ATFM/CDM Data Information Sharing	8	-
5.	Capacity, Demand and fix balancing	1. Balancing demand and capacity 2. ATFM Communications I	Demand and Capacity Balancing Mechanism a. ATFM/CDM Terminologies b. ATFM Phraseology c. Stakeholder ATFM Communication d. ATFM Communication Oversight	8	-
6.	ATFM Measures	ATFM Measures I	a. ATFM Measures Methodology b. Types of ATFM Measures c. ATFM Measure Approval Authority d. ATFM Measures Processing	4	-
7.	Soft Skill	1. Communication Skill 2. Negotiation Skill	Introduction Communication Skill Introduction Negotiation Skill	4	-
8.	Simulation	ATFM Role Play		-	16
9.	Exam / Evaluation			2	-
AMOUNT				40	16
TOTAL				56 TH	

Note : T = Theory, P = Practice, TH = Training Hour (45 min/TH)

LEVEL 3

Level 3					
A thorough knowledge of the subject and the ability to apply it with accuracy. The ability to make use of the repertoire of knowledge to develop plans and activate them.					
NO	SUBJECTS	MATTER	SUB MATTER	HOURS	
				T	P
1.	Translation of Training Programs	1. Introduction Program Training 2. Provisions for the implementation of education and training	a. Introductions among participants and facilitators b. Concept Program c. Training Objectives d. Description Training e. Training Implementation Structure a. The provisions for the implementation of the training (schedule, implementation in the classroom, meals, accommodation, etc.) b. Evaluation Implementation Plan	2	-
2.	Air Traffic Flow Management (ATFM)	ATFM/CDM Operation Concept	a. ATFM Function and Procedure b. Network Operation c. ATFM Phases	4	-
3.	ATFM Service	1. ATFM Service 2. Collaborative decision-making (CDM)	a. Establishment ATFM Service b. Factor to be Consider c. Data Supply for ATFM Service a. Collaborative decision-making (CDM) in the context of ATFM b. CDM Deployment and Roles Implementation c. ATFM/CDM Data Information Sharing Implementation	8	-
4.	Capacity, Demand and fix balancing	1. Balancing demand and capacity 2. ATFM Communications II	Demand and Capacity Balancing Mechanism a. Modular and Structured ATFM messages: 5W b. ATFM Message Components c. ATFM Message Types d. Active Listening	4	-
5.	ATFM Measures	ATFM Measures II	a. Application of ATFM Solutions b. ATFM Efficiency Calculation c. Principles of delay analysis d. Attribution and Accountability for ATFM Measures e. Reporting	4	-
6.	ATFM Tools	1. Planning Tools	a. Airspace Design and ATS Route Planning Tools b. Capacity Analysis and	16	-

Level 3					
A thorough knowledge of the subject and the ability to apply it with accuracy. The ability to make use of the repertoire of knowledge to develop plans and activate them.					
NO	SUBJECTS	MATTER	SUB MATTER	HOURS	
				T	P
		2. Prediction and Monitoring Tools	Workload Modelling Tools a. Demand and workload Prediction Tools b. Weather Prediction Tools c. Monitoring Tools		
		3. Execution Tools (Introduction)	a. Slot Allocation Tools b. Route and Fix Balancing Tools c. Flight Level Balancing Tools d. Airspace User Slot Swapping Tools		
		4. CDM Tools (Introduction)	a. Information Exchange Tools b. Collaboration Tools c. Electronic User Helpdesks d. Crisis Management Tools		
		5. Analysis Tools (Introduction)	a. Data Analysis and Reporting Tools b. Replay Support Tools		
7.	Airport Integration	System Integration and Data Exchange	a. Flight Update Message (FUM) b. Departure Planning Information (DPI)	4	-
8.	Airspace Operational Management	Airspace Operational Management	a. Rerouting Airways and traffic forecasting b. Introduction of Flexible Use of Airspace (FUA)	2	-
9.	Data Exchange	Introduction of Data Exchange in ATFM	a. Data and Information Exchange In ATFM Service b. Benefits of Data and Information Exchange c. International Data and Information Exchange Requirements	4	-
10.	Soft Skill	1. Team Management 2. Strategy Tools 3. Decision Making	a. Coordination Skill b. Negotiations	6	-
11.	Simulation			-	16
12.	Exam / Evaluation			2	-
AMOUNT				56	16
TOTAL				72 TH	

Note : T = Theory, P = Practice, TH = Training Hour (45 min/TH)

LEVEL 4

Level 4					
The ability to establish a line of action within a unit of known applications following the correct chronology and the adequate method to resolve a problem situation. This involves the integration of known applications in a familiar situation.					
NO	SUBJECTS	MATTER	SUB MATTER	HOURS	
				T	P
1.	Translation of Training Programs	1. Introduction Program Training 2. Provisions for the implementation of education and training	a. Introductions among participants and facilitators b. Concept Program c. Training Objectives d. Description Training e. Training Implementation Structure a. The provisions for the implementation of the training (schedule, implementation in the classroom, meals, accommodation, etc.) b. Evaluation Implementation Plan	2	-
2.	ATFM Tools	1. Planning Tools 2. Prediction and Monitoring Tools	a. Airspace Design and ATS Route Planning Tools b. Capacity Analysis and Workload Modelling Tools a. Demand and Workload Prediction Tools b. Weather Analysis and Forecasting c. Monitoring Tools	14	-
3.	Airspace Operational Management	Airspace Operational Management	a. Rerouting Airways and Traffic Forecasting b. Flexible Use of Airspace(FUA) c. Military Civil Coordination	2	-
4.	Capacity Management	Capacity Management	a. Capacity Assessment b. Regulation of ATC Capacity and Traffic Volumes c. Enhancement of ATC, Airport and Airspace Capacity	6	-
5.	Soft Skill	1. Leadership Skills 2. Problem Solving 3. Stress Management	a. Attitude b. Emotional Quotient (EQ) c. Communication Skill d. Negotiation Skill e. Personality a. Chronologies b. Analysis Problem Skill c. Decision Making Skill a. Self-Control b. Conflict Management Skill	6	-

Level 4					
The ability to establish a line of action within a unit of known applications following the correct chronology and the adequate method to resolve a problem situation. This involves the integration of known applications in a familiar situation.					
NO	SUBJECTS	MATTER	SUB MATTER	HOURS	
				T	P
6.	Simulation			-	16
7.	Exam / Evaluation			2	-
AMOUNT				32	16
TOTAL				48 TH	

Note : T = Theory, P = Practice, TH = Training Hour (45 min/TH)

LEVEL 5

Level 5					
The ability to analyse new situations in order to elaborate and apply one or other relevant strategy to solve a complex problem. The defining feature is that the situation is qualitatively different to those previous.					
NO	SUBJECTS	MATTER	SUB MATTER	HOURS	
				T	P
1.	Translation of Training Programs	1. Introduction Program Training 2. Provisions for the implementation of education and training	a. Introductions among participants and facilitators b. Concept Program c. Training Objectives d. Description Training e. Training Implementation Structure a. The provisions for the implementation of the training (schedule, implementation in the classroom, meals, accommodation, etc.) b. Evaluation Implementation Plan	2	-
2.	ATFM Tools	1. CDM Tools 2. Analysis Tools	a. Information Exchange Tools b. Collaboration Tools c. Electronic User Helpdesks d. Crisis Management Tools a. Data Analysis and Reporting Tools b. Replay Support Tools	8	
3.	Capacity Management	Capacity Management	a. Capacity assessment b. Regulation of ATC capacity and traffic volumes c. Enhancement of ATC and Airspace Capacity	12	-
4.	Soft Skill	1. Leadership Skills	a. Attitude b. Emotional Quotient (EQ)	16	-

Level 5					
The ability to analyse new situations in order to elaborate and apply one or other relevant strategy to solve a complex problem. The defining feature is that the situation is qualitatively different to those previous.					
NO	SUBJECTS	MATTER	SUB MATTER	HOURS	
				T	P
		2. Strategic Skill	c. Communication Skill d. Negotiation Skill e. Personality a. Chronologies b. Analysis Problem Skill c. Problem Solving Skill d. Decision Making Skill		
		3. Stress Management	a. Self-Control b. Conflict Management Skill c. Crisis Management		
		4. Career Skill	a. Managing Resources Skill b. Human Resource Assessing Process		
		5. Team Management Skill	a. Performance Identification Skill b. Resource Organizing Skill		
5.	Simulation			-	18
6.	Exam / Evaluation			2	4
AMOUNT				40	22
TOTAL				62 TH	

Note : T = Theory, P = Practice, TH = Training Hour (45 min/TH)

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