GREPECAS/14-WP/30
International Civil Aviation Organization 19/02/07
Fourteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS)
San Jose, Costa Rica, 16-20 April 2007

Agenda Item 2: Analysis of global, inter- and intra-regional activities

2.1: Interregional and intra-regional CNS/ATM activities and coordination

COMMON AIR TRAFFIC FLOW MANAGEMENT TERMINOLOGY

(Presented by the United States of America)

SUMMARY

This working paper provides a summary of the work accomplished in other ICAO Regions and is based largely on the "Phraseology for the Exchange of ATFM Messages Handbook" dated February 2003, by the Multi-Agency Air Traffic Services Procedures Coordination Group (MAPCOG) ATFM Task Force, which is a joint effort between EUROCONTROL, NAV CANADA and the FAA. It also draws on the work accomplished between the FAA Air Traffic Control System Command Center (ATCSCC) and the Japan Civil Aviation Bureau Air Traffic Management Center. This paper represents one initiative to support an ICAO effort to standardize ATFM terminology and phraseology.

1 Background

1.1 Centralized traffic management facilities are best able to communicate their national system's ability to accept traffic from adjacent international air traffic service (ATS) providers. As coordination and collaboration efforts increase between the States and Territories, effective communications are essential. A key element in removing language barriers is establishing common terms and phrases. Terminology and phraseology differences in air traffic flow management (ATFM) could be a potential source of confusion during communications among international Traffic Management Units.

1.2 The terminology will be an essential element in developing definitive, clear, and concise communication between international ATFM units. Likewise, the phraseology will be a technical pattern of communication to exchange standardized and harmonized messages between international ATFM units. This work should be combined with an ICAO effort to standardize ATFM terms.

1.3 This information paper is based largely on the "Phraseology for the Exchange of ATFM Messages Handbook" dated February 2003, by the Multi-Agency Air Traffic Services Procedures Coordination Group (MAPCOG) ATFM Task Force, which is a joint effort between EUROCONTROL, NAV CANADA and the FAA. It also draws on the work accomplished between the ATCSCC and the Japan Civil Aviation Bureau Air Traffic Management Center (ATMC).

2 Discussion

2.1 ATFM is a service complementary to air traffic control. The objective of ATFM is to ensure an optimum flow of air traffic to or through areas and aerodromes where traffic demand at times exceeds the available capacity of the ATC system. This optimum flow will be achieved by maintaining, in continuous cooperation with related ATC units and airspace users, a balance between the traffic demand and the ability to accommodate that demand.

2.2 The operation of ATFM services, while respecting the intentions of the airspace users to the maximum extent possible, will ensure:

a. Full exploitation of available ATC capacity
b. Maximum flexibility in handling traffic flows
c. Expeditious and orderly traffic flows

2.3 The operation of ATFM services includes the application of ATFM measures that are designed to achieve the optimum flow of traffic. These measures include but are not limited to:

a. Allocating and updating departure slots
b. Allocating and updating arrival slots
c. Rerouting of traffic
d. Alternate flight profiles
e. Minutes-in-trail assignments
f. Miles-in-trail assignments
g. Airborne holding
h. Ground stops

2.4 In the FAA, the ATCSCC is the approving authority for ATFM measures within the United States national airspace system.

2.5 ATFM is performed by the ATCSCC in six phases on a daily basis:

a. Exploration
b. Justification
c. Implementation
d. Validation
e. Critique
f. Review

2.6 The Exploration phase of ATFM consists of examining demand in relation to capacity. This is accomplished via evaluation of Enhanced Traffic Management System (ETMS) data and through periodic telephone conferences that are designed to consider planned and anticipated events. The Justification phase consists of determining the rationale for implementing an ATFM measure. The Implementation phase consists of the notification and application of the ATFM measure. The Validation phase consists of monitoring the implemented ATFM measure to validate the rationale for its implementation. The Critique phase examines if the implemented ATFM measure achieved the desired outcome. The Review phase documents the day's events and includes the retention of data.

Terminology and Phraseology as Used in the Exchange of ATFM Messages

2.7 Terminology and phraseology for air traffic control are both standardized and documented to ensure that communications between air traffic controllers and pilots are brief, complete, accurate and understood. Terminology and phraseology for the exchange of ATFM messages, however, have been neither standardized nor documented.

2.8 Historically, air traffic controllers were the initial operators of the ATFM system. For example, a departure controller would contact a tower controller and say “Stop departures.” A tower controller would also have contacted an approach controller to say “Hold arrivals.” These two common ATC phrases are neither standardized nor documented. Although there are elements of standardization for communications between air traffic controllers, there has always also been a plain language element of ATC communications.

2.9 The evolution of ATFM has brought about more robust and complex systems, but the use of plain language is still evident and is current practice. Additionally, the transparency of current ATFM systems and the inclusion of non-ATC users also contribute to the use of plain language.

2.10 As ATFM becomes more global in nature, regional providers of ATFM service such as the Centro de Control de Flujo de Mexico (CCFMEX) and the ATCSCC may need to consider which plain language words and phrases are best suited for the exchange of ATFM messages. This is especially important when linking adjacent ATFM systems or introducing ATFM in areas where it presently does not exist.

2.11 The attached document was prepared by the Common ATFM Task Force which was established during the 22nd Meeting of the Informal Pacific Air Traffic Control Coordination Group (IPACG). This Task Force was established to address bilateral issues in the North and Central Pacific oceanic areas. The document contains terminology and phraseology for the exchange of ATFM messages between the Japan Civil Aviation Bureau Air Traffic Management Center (ATMC) and the ATCSCC. The work is based on the MAPCOG Phraseology for the Exchange of ATFM Messages Handbook. The terminology and phraseology are not intended to be a requirement for ATFM communications, but may be used as a guideline for the exchange of ATFM messages. It also contains those ATFM related abbreviations used by the ATCSCC and ATMC that are not defined in the ICAO Doc. 8400 (PANS-ABC).

3 Recommendation

3.1 The meeting is invited to:

a. Review the attached guideline for terminology and phraseology, which provides standard guidance for the exchange of ATFM messages; and

b. Consider developing a guideline for ATFM communication in the CAR/SAM regions.

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ATTACHMENT

INTERIM GUIDELINE FOR ATFM COMMUNICATION

Version 1.0

October 2006

FOREWORD

Centralized traffic management facilities are best able to communicate their national system's ability to accept traffic from adjacent international air traffic service (ATS) providers. As coordination and collaboration efforts intensify between the countries, effective communications are essential. A key element in removing language barriers is establishing common terms and phrases. Terminology and phraseology differences in air traffic flow management (ATFM) could be a potential source of confusion during communications among the Japan Civil Aviation Bureau (JCAB) Air Traffic Management Center (ATMC) and the Federal Aviation Administration (FAA) David J. Hurley Air Traffic Control System Command Center (ATCSCC).

IPACG/21 discussions resulted in a recommendation to develop the common terms of reference for ATFM communications. IPACG/22 supported the formation of a Task Force to address this issue. The operation of the Task Force was outlined at IPACG/23. The ATCSCC and ATMC established a process to examine the ATFM common terminology and phraseology at IPACG/24. This document was submitted by the Task Force at IPACG/25. The bilateral effort herein should be combined with an ICAO effort to standardize ATFM terms in the future.

The terminology will be an essential element in developing definitive, clear, and concise communication between international ATFM units. Likewise, the phraseology will be a technical pattern of communication to exchange standardized and harmonized messages between international ATFM units. These terminology and phraseology are not intended to be a requirement for ATFM communications, but may be used as a guideline for the exchange of ATFM messages.

This guideline is largely based on the "Phraseology for the Exchange of ATFM Messages Handbook" dated February 2003, by the Multi-Agency Air Traffic Services Procedures Coordination Group (MAPCOG) ATFM Task Force, which is a joint effort between EUROCONTROL, NAV CANADA and the FAA.

TABLE OF CONTENTS

1. General

1.1 The primary goal of these guidelines is to develop terminology and phraseology for the exchange of ATFM messages between units providing ATFM services. The terminology and phraseology contained herein are intended to both reflect the current use of plain language and provide a basis for standardization and harmonization.

1.2 Although there are various plain language words and phrases in use today by ATFM service providers, these words and phrases can be organized into a modular and structured method of delivery to ensure communication harmonization and reduce the incidence of misunderstanding between units providing ATFM service.

1.3 These guidelines include the concept of modular and structured ATFM messages and defines an ATFM message's components as *who*, *what*, *where*, *when* and *why*. These five components are described as follows:

1). Who: The ATFM service unit being contacted followed by the ATFM service unit that is initiating the contact.
2). What: The ATFM objective to be achieved.
3). Where: The location of the ATFM objective to be achieved.
4). When: The time and/or duration of the ATFM objective to be achieved.
5). Why: The reason for the ATFM objective.

1.4 There should be no module regarding “how” the ATFM restrictions should be achieved by the counterpart ATFM service provider. It is the counterpart’s responsibility how they fulfill the requested ATFM restrictions within their airspace. However, the center being asked for the ATFM restrictions may collaborate with the originating center on the type and method of ATFM measure application.

1.5 Below are the examples of possible ATFM messages:

- ATCSCC, this is ATMC…We need 100 miles interval regardless of altitude on R220, R580 and all the PACOTS tracks for traffic landing at Narita airport estimated FIR boundary from 0100 UTC until 0500 UTC due to severe weather.
- ATMC, this is ATCSCC…Information maybe developed into ATFM… Los Angeles has started flow control for all aircraft landing at Los Angeles airport due to earthquake. They are requesting ground stops for arrivals until further notice.

2. ATFM Message Components

2.1 The use of a modular and structured ATFM message provides for consistent ATFM message design and delivery. Each of the ATFM message's five components can contain plain language elements that when combined provide a complete ATFM message. The harmonization achieved lies in the delivery of an ATFM message that has all of the required components in a structured format while making allowances for different plain language elements. This is of particular benefit for ATFM service providers that use different ATFM terminology or for ATFM service providers that do not use English for their intra-ATFM coordination.

As the modular and structured ATFM message may contain several different elements of plain language, this section will examine each of the five components and detail some of the possible plain language words and phrases that are in use today.

2.2 **WHO**: The *who* component identifies the ATFM service unit being contacted followed by the ATFM service unit that is initiating the contact. Examples of the who component:

- ATMC, this is ATCSCC…
- ATCSCC, this is ATMC…

2.3 **WHAT**: The *what* component identifies the ATFM objective to be achieved. Objectives include but are not limited to:

I/WE NEED…

- (X) MILES/MINUTES INTERVAL AT THE SAME ALTITUDE…
- (X) MILES/MINUTES INTERVAL REGARDLESS OF ALTITUDE…
- A RATE OF (X) AIRCRAFT PER HOUR…
- (X) MILES-IN-TRAIL AT (specified altitude(s))…
- (X) MINUTES-IN-TRAIL AT (specified altitude(s))…
- TO BLOCK (specified altitude(s))
- TO LIMIT THE ACCEPTABLE ALTITUDE TO (specified altitude(s))
- TO SUSPEND THE FIR ENTRY…

2.4 **WHERE**: The *where* component represents the location of the ATFM objective to be achieved. It is often preceded by modifying clause, indicating what aircraft or traffic the restriction will apply to. The modifying clause and the location combination are used to construct there where component.

Examples of there where clause:

- …OVER NIPPI…
- …NARITA AIRPORT…
- …ANCHORAGE APPROACH…
- …ON A337…
- …WESTBOUND ON PACOTS TRACK C…
- …EAST FLOW ON A590…
- …INBOUND ON G344…
- …ON PACOTS TRACK 2 LANDING AT SAN FRANCISCO AIRPORT…
- …ON PACOTS TRACK E BELOW FLIGHT LEVEL (X)…
- …ABOVE FLIGHT LEVEL (X)…
- …INBOUND TO TOKYO ACC…
- …INBOUND TO OCEANIC SECTOR 5…
- ... (compass direction) OF (a significant point/airway/location)…

Examples of the modifying clause:

- …FOR TURBOJET TRAFFIC…
- …FOR ALL AIRCRAFT…
- …FOR TRAFFIC GREATER THAN (X) KNOTS…
- …FOR HEAVY AIRCRAFT…
- …FOR TRAFFIC LANDING…
- …FOR AIRCRAFT DEPARTING…
- …FOR TRAFFIC OVERFLYING…
- …FOR AIRCRAFT PASSING…

2.5 **WHEN**: The *when* component represents the time and/or duration of the ATFM objective to be achieved:

- …FROM 0300 UTC UNTIL 0600 UTC…
- …FROM NOW UNTIL 0600 UTC…
- …FROM 2300 UTC UNTIL FURTHER NOTICE…
- …UNTIL FURTHER NOTICE…
- …FOR THE NEXT (X) HOURS…

2.6 **WHY**: The *why* component represents the reason for the ATFM objective:

DUE TO/FOR…
- RUNWAY CLOSURE
- (SEVERE) WEATHER
- COMMUNICATION SYSTEM OUTAGE
- RADAR FAILURE
- (significant event)
- (natural disturbance such as FIRE or VOLCANIC ASH)
- STATE ACTIVITY
- MILITARY ACTIVITY
- EQUIPMENT OUTAGE
- EMERGENCY
- ADJACENT ATFM MEASURES

3. ATFM Message Types

3.1 **Information to be shared prior to invoking the ATFM restrictions**: The information-sharing should be facilitated not only during the actual flow control but also (and more importantly) well prior to invoking the ATFM restrictions when the possibility of flow control arises. The following phrases will make clear the distinction between the ATFM messages and the information provided for situation awareness:

- INFORMATION MAY BE DEVELOPED INTO ATFM
- CAPACITY RELATED INFORMATION

3.2 Examples of messages sent prior to invoking ATFM restrictions follow:

- ATCSCC, this is ATMC…**Information may be developed into ATFM**… Narita airport has closed one of the runways and started snow removal.
- ATCSCC, this is ATMC…**Capacity related information**…Narita airport has entered the storm zone of the typhoon.

3.3 **ATFM Initiative Message**: ATFM initiatives communicate air traffic restrictions from one nation to another. They follow the five component structure described earlier:

1). Who: The ATFM service unit being contacted followed by the ATFM service unit that is initiating the contact.
2). What: The ATFM objective to be achieved.
3). Where: The location of the ATFM objective to be achieved.
4). When: The time and/or duration of the ATFM objective to be achieved.
5). Why: The reason for the ATFM objective.

3.4 Examples of ATFM initiatives follow:

- ATMC, this is ATCSCC…**I need a 30 minute interval at the same altitude** *for all aircraft landing at Chicago airport* from 0800 UTC until further notice due to state activities.
- ATCSCC, this is ATMC…**We need to block FL350 and below** *for aircraft overflying Japanese domestic airspace* for the next 12 hours due to emergency.

3.5 **Coordination of aircraft exempted from ATFM initiatives**: The following phrases will be used for the coordination of aircraft which are deemed necessary to exempt from the ATFM restrictions:

- REQUEST EXEMPTION FROM ATFM
- COORDINATION OF ATFM EXEMPTION

3.6 The following types of aircraft may be exempted from the flow control restrictions:

- Aircraft in a state of emergency
- Aircraft engaged in search and rescue missions
- Aircraft operating for humanitarian reasons
- Aircraft carrying the head of state or distinguished visitors of state
- Aircraft carrying a patient who needs urgent treatment

3.7 Examples of messages requesting ATFM exemption follow:

- ATMC, this is ATCSCC…**Request exemption from ATFM**…UAL123 is carrying a patient who needs urgent treatment.
  UAL123…Exemption is approved.
- ATCSCC, this is ATMC…**Coordination of ATFM exemption**… JA501A is operating for search and rescue missions.

3.8 **Information for the next coordination**: If it is possible and appropriate, the expected time of next coordination will be forwarded with the ATFM messages:

- I WILL CALL YOU AT 0400 UTC FOR FURTHER COORDINATION
- WE WILL CALL YOU AGAIN IN 30 MINUTES

3.9 An example of a message with information for the next coordination follows:

- ATMC, this is ATCSCC…I need a 30 minute interval regardless of altitude for all aircraft on PACOTS track 8 from 1000 UTC until further notice due to military activity. I will call you again in 60 minutes.

3.10 **Amendment**: The amendment of an ATFM message should be structured as the initial message and include similar elements but with additional modifiers. These modifiers may include:

- CHANGE
- AMEND
- REDUCE
- INCREASE
- DECREASE

3.11 Amendment messages should also identify which message is being amended, as several restrictions could be in place at one time. Examples of ATFM amendment messages follow:

- ATCSCC, this is ATMC…We have **changed** the restriction on traffic flying PACOTS tracks C, E and F for Narita airport. We now need 20 minutes intervals at the same altitude on PACOTS tracks C, E and F for traffic landing at Narita airport from now until 0900 UTC.
- ATMC, this is ATCSCC…We have **increased** the inbound rate from 5 aircraft per hour to 10 aircraft per hour for traffic beyond Oakland FIR until further notice.

3.12 **Cancellation**: The cancellation of an ATFM message should be structured as the initial message and include similar elements but contain a canceling word or phrase. It is normally not necessary to state the *why* or reason for the cancellation. A canceling word or phrase may include:

- CANCEL
- RESUME
- RESUME NORMAL
- RELEASE

3.13 Cancellation messages should also identify which message is being cancelled, as several restrictions could be in place at one time. An example of an ATFM cancellation message follows:

- ATCSCC, this is ATMC…We have **canceled** the restriction on traffic beyond the Fukuoka FIR at this time. **Resume normal** traffic flow.

4. Abbreviations

4.1 The abbreviations used by the ATCSCC and ATMC that are not defined in the ICAO Doc. 8400 (PANS-ABC), are shown in the **Appendix**. The shaded abbreviations are considered to be the common terms between the two centers.

4.2 The non-common abbreviations are deemed inappropriate for the inter-facility ATFM communication between ATCSCC and ATMC.

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APPENDIX

TABLE OF ABBREVIATIONS

The abbreviations listed here are those used by ATCSCC and ATMC respectively that are not defined in the ICAO Doc. 8400 (PANS-ABC). The shaded abbreviations are considered to be the common terms between the two centers. The asterisk shows verbatim difference in the original collocation but the abbreviation still indicates the common object.

	ATCSCC	ATMC
AAR	Airport Acceptance Rate	
ACID	Aircraft Identification	
ADL	Aggregate Demand List	
ADR	Airport Departure Rate	
ADZY	Advisory	
AIM	Aeronautical Information Manual	
ALTRV	Altitude Reservation	Altitude Reservation
ANP	Air Navigation Plan	
AOA	Office of the Administrator	
AOC	Airline Operations Center	
AP	Air Patrol	
APREQ	Approval Request	Approval Request
APVL	Approval	Approval
ARINC	Aeronautical Radio Incorporated	
ARO	Airport Reservation Office	
ARTCC	Air Route Traffic Control Center	Air Route Traffic Control Center
ARU	Airspace Reservation Unit (Canada)	
ASM		Airspace Management
AT	Air Traffic	
ATCSCC	Air Traffic Control System Command Center	Air Traffic Control System Command Center
ATMC	Air Traffic Management Center	Air Traffic Management Center
ATMetC		Air Traffic Meteorological Center
ATO	Air Traffic Operations Program	
AUTODIN	Automatic Digital Network	
CARF	Central Altitude Reservation Function	
CCFP	Collaborative Collective Forecast Product	
CCWSU	Command Center Weather Service Unit	
CDM	Collaborative Decision Making	Collaborative Decision Making

	ATCSCC	ATMC
CDR	Coded Departure Route(s)	Conditional Route
CDR	Continuous Data Recording	
CDT	Controlled Departure Time	
CFR	Code of Federal Regulations (formerly FAR)	
CIWS	Corridor Integrated Weather System	
COMSEC	Communications Security System	
CR	Collaborative Routing	
CT	Select Flights Ground Delay Program	
CTA	Controlled Time of Arrival	
CTAS-TMA	Center TRACON Automation System Traffic Management Advisor	
CVRS	Computerized Voice Reservation System	
CWA	Central Weather Advisory	
CWSU	Center Weather Service Unit	
DARC	Direct Access Radar Channel	
DCCWU	ATCSCC Weather Unit	
DOTS	Dynamic Ocean Track System	Dynamic Ocean Track System
DP	Departure Procedure	
DSP	Departure Sequencing Program	
EDCT	Expected Departure Clearance Time	Expected Departure Clearance Time
EFAS	Enroute Flight Advisory Service	
EFTO	Encrypt For Transmission Only	
EOF	Emergency Operations Facility	
EOR	Emergency Operations Room	
EPS	Engineered Performance Standards	
ESCAT	Emergency Security Control of Air Traffic	
ETE	Estimated Time Enroute	Estimated Time Enroute
ETMS	Enhanced Traffic Management System	
EUCARF	European Central Altitude Reservation Facility	
FA	General Ground Delay Program	
FAA	Federal Aviation Administration	Federal Aviation Administration
FADT	Fuel Advisory Delay Time	
FCA	Flow Constrained Area	
FDMS		Flight Data Management System

	ATCSCC	ATMC
FDPS		Flight Data Processing Section
FEA	Flow Evaluation Area	
FP	Flight Plan	
FPL	Full Performance Level	
GA	General Aviation	
GAAP	General Aviation Airport Program	
GDP	Ground Delay Program	
GS	Ground Stop	
HARS	High Altitude Route System	
HDTA	High Density Traffic Airport	
IFCN	Interfacility Communication Network	
IFPFP	Individual Flight Plan From this Point	Individual Flight Plan From this Point
IFSS	International Flight Service Station	
INATS	Interruption of Air Traffic Service	
JCAB	Japan Civil Aviation Bureau	Japan Civil Aviation Bureau
LAA	Local Airport Advisory	
LADP	Local Airport Deicing Plan	
LOA	Letter of Agreement	Letter of Agreement
MAP	Monitor Alert Parameter	
MARSA	Military Assumes Responsibility for Separation of Aircraft	Military Assumes Responsibility for Separation of Aircraft
MEL	Minimum Equipment List	
MINIT	Minutes in Trail	
MIT	Miles in Trail	
MOS	Military Operations Specialist	
MTSAT	Multi-functional Transport Satellite	Multi-functional Transport Satellite
MVFR	Marginal Visual Flight Rules	
NADIN	National Airspace Data Interchange Network	
NAS	National Airspace System	
NAVAID*	Navigational Aid	Navigation Aid
NFDC	National Flight Data Center	
NMCC	National Maintenance Coordination Center	
NOAA	National Oceanic and Atmospheric Administration	
NOM	National Operations Manager	

	ATCSCC	ATMC
NOPAC	North Pacific	North Pacific
NOS	National Oceanographic Service	
NRP	National Route Program	
NTMO	National Traffic Management Officer	
NWS	National Weather Service	
OAG	Official Airline Guide	
ODP		Oceanic Air Traffic Control Data Processing System
OPSNET	Operations Network	
OTG		Oceanic Track Generator
OTR		Oceanic Transition Route
PACMARF*	Pacific Military Altitude Reservation Facility	Pacific Military Altitude Reservation Function
PACOTS	Pacific Organized Track System	Pacific Organized Track System
PMTC	Pacific Missile Test Center	
PO	Plan of Operation	
Pref Route	Preferential Route	
PT	Planning Team	
RA	Route Advisory	
RAA	Remote Airport Advisory	
ROT	Runway Occupancy Time	
SAA	Special Activity Airspace	
SOP	Standard Operating Procedure	
STMP	Special Traffic Management Program	
SUA	Special Use Airspace	
SVRW	Severe Weather	
SWAP	Severe Weather Avoidance Program	
TEC	Tower-Enroute Control	
TELCON	Telephone Conference	
TFM	Traffic Flow Management	
TIS	Traffic Information System	
TMC	Traffic Management Coordinator	Traffic Management Coordinator
TMCIC	Traffic Management Coordinator in Charge	
TMI	Traffic Management Initiative	
TMU	Traffic Management Unit	Traffic Management Unit

	ATCSCC	ATMC
TSTM	Thunderstorm	
WSO	Weather Service Office	

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