Nineteenth Meeting of the Cross Polar Trans East Air Traffic Management Providers' Work Group (CPWG/19)

(Tokyo, Japan, 11-15 May 2015)

Agenda Item 5: Status on CPWG/18 Actions

Reroutes and Coordination Issues Associated with Volcanic Events

(Action Item CP18-02)

(Presented by the United States)

SUMMARY

This working paper presents information on issues raised by a case study provided by American Airlines at the 16th Meeting of the Cross Polar Trans East Air Traffic Management Providers' Work Group and seeks a way to harmonize the best practices for handling significant reroutes of numerous aircraft for the Group to consider.

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1.   **Introduction**

1.1   During the 16th Meeting of the Cross Polar Trans East Air Traffic Management Provider's Work Group (CPWG/16), American Airlines (AAL) presented a working paper (WP04) regarding events affecting an airborne flight during the eruption of the Kliuchevskoi Volcano on the Kamchatka Peninsula on 16 October 2013.

1.2   Updated information provided by Tokyo VAAC indicated that the original impact of the Kliuchevskoi eruption may have been greater than originally forecast. A decision to re-evaluate the published westbound Pacific Organized Track System (PACOTS) flex tracks was made with collaboration from airline operators, Anchorage ARTCC (ZAN), Oakland ARTCC (ZOA), and other stakeholders. A decision to amend the PACOTS about ten degrees south of where they were originally planned was reached and the tracks were reissued accordingly.

1.3   At the time the decision was made to reissue the PACOTS, AAL175 was approximately 45 minutes into their flight from KDFW to RJAA. AAL dispatch began working with their flight crew and ATC to reroute the aircraft. The AAL dispatcher issued a new routing to the aircraft via ACARS and sent the same routing to ATC.

1.4   There were several issues noted with coordination of the new routing and issuance of the route to the flight crew. AAL noted that while they submitted a new flight plan to US domestic ATC, the flight plan was not received by the facility currently working the aircraft or those facilities further along the aircraft's route in U.S. domestic airspace. Flight plan information was sent successfully to both Russia and Japan. However, it was noted that there were some coordination issues with Japan because they had already received departure message information on the original flight plan.

1.5   The Federal Aviation Administration (FAA) presented a working paper (WP/10) during the CPWG/17 meeting addressing some of the concerns raised by AAL. Based on the study

provided by AAL, it was noted that there are shortfalls in existing procedures during volcanic eruptions or other events where route changes need to be made. Several questions were raised, including the following:

- What is the best way to coordinate a reroute once an aircraft is airborne?
- What resources are available for coordination (e.g., MATMC, ATCSCC, etc.)?
- Who is responsible and what is the best mechanism for coordinating entry into airspace that was not originally part of the aircraft's flight planned route? For instance, in the case of AAL175, what would be the best way to assure timely coordination and approval to overfly Russian airspace?

1.6   In addition, Japan Civil Aviation Bureau posed the following questions:

- Does Flight Data deal with CHG messages or are they automatically updated in the flight plan?
- Do dispatchers and pilots agree when a CHG message is sent to an ATC facility?
- Are reroutes issued when a CHG message is received from an aircraft in flight?
- Are there any disadvantages when ATC receives a route change request directly from an in-flight aircraft?

1.7   In an attempt to answer the questions posed in 1.5 and 1.6 of this paper and seek a harmonized approach to handling airborne reroutes, the FAA presented a working paper (WP/12) at the CPWG/18 meeting. During review of WP/12, the airlines noted that the only message that they have available to send requested changes to a flight plan is a CHG message. The ANSPs noted various differences in how their respective systems process CHG messages and as to whether they were acceptable for airborne aircraft. There was also discussion about the implications of sending CHG messages and possible confusion between ATC and flight crews over routing (e.g. does an aircraft that was "cleared as filed" fly the route sent via CHG message even if ATC does not issue a clearance to fly the new route?).

1.8   It was suggested that a table be developed that examined how each ANSP processes CHG messages.

1.9   This paper presents the results of the CHG message survey that was sent to the various CPWG ANSPs and seeks to determine the following:

- What trends/information does the data indicate in trying to develop a harmonized approach?
- Is this an issue that requires a regional or global solution?
- What are seen as "best practices" for coordinating airborne reroutes?
- What resources are available for facilitating coordination?

2.   Discussion

2.1   The FAA developed a change message data form that was distributed to ANSPs that covered seven questions. An overview of the responses can be found in Table 1. Detailed responses are available in Attachment A.

Table 1. Overview of Questionnaire Responses

ANSP	CHG before dept	CHG prior to Ocean/Remote	CHG after Ocean/Remote	FP Processing pre-dept	FP Processing post-dept	Advanced approval?	Time for advanced approval
State ATM	Yes	Yes	Yes	ACK/REJ to FPL sender. PLN sent to ATFM Centers and PLN re-addressed to other ACCs	Same as pre-dept.	Yes	3-40 days with exceptions
JCAB	Yes	Unacceptable	Unacceptable	Airlines select addressees	Unable to accept CHG message after departure-JCAB system can't send CHG to other ANSPs	No	N/A
Edmonton	Yes	Yes	No	AFTN	AFTN	No	N/A
Vancouver	Yes	No	N/A	AFTN	CPL messages to Seattle and Anchorage via NAM interface. CNL used if re-route avoids airspace previously coordinated with CPL message.	No	N/A
Bodo	Yes	ACH message	No	IFPS	Manual coordination + AFP to IFPS (which sends	FPL from IFPS	N/A

					ACH/APL to affected ANSPs)		
Reykjavik	Yes	No	No	AFTN	Adjacent facilities notified via ABI message, followed by CPL message. CNL messages used to notify of route change which invalidates coordination.	Per LOAs with adjacent facilities	N/A
FAA	Yes	No for domestic system. ATOP will accept.	No for domestic system. ATOP will send error message to controller.	Aircraft operator sends FPL information when filing to ANSPs.	AISR Service B message via AFTN. This is a manual process completed by the En Route facility at point of origin. Any changes after a/c departs coordinated via AIDC or manually.	No	N/A

2.2   As discussed during the CPWG/17 and 18 meetings, there were several shortfalls noted in existing procedures. Some of these were noted as-
- What is the best way to coordinate a reroute once an aircraft is airborne?
- What resources are available for coordination (e.g. MATMC, ATCSCC, etc.)?
- Who is responsible and what is the best mechanism for coordinating entry into airspace that was not originally part of the aircraft's flight planned route? For instance, in the case of AAL175, what would be the best way to assure timely coordination and approval to overfly Russian airspace?

2.3   Based upon the information provided from ANSPs in the CHG message form, the CPWG is asked to consider the issues as noted in the introduction and in 2.2 above in attempting to resolve the concerns posed by aircraft operators and ANSPs in processing airborne reroutes, especially during significant events requiring numerous aircraft route changes.

**3.	Action by the Meeting**

3.1	The meeting is invited to:

    a.	review the information contained in this Working Paper;

    b.	review/analyse results of the CHG message survey;

    c.	consider whether the issue of use of CHG messages for airborne reroutes is a global or regional issue; and

    d.	consider best practices and discuss what can be done to harmonize the airborne reroute process

	State ATM	JCAB	US FAA-ZAN	Norway	CANADA Vancouver	CANADA Edmonton	ISAVIA Reykjavik
En Route change prior to departure	YES	Acceptable	ZAN FDP2000: The system will accept a CHG message for a previously received FPL provided the CHG message is from the same source as the FPL and as long as Flight Progress Strips have not yet been printed at any FDP2000 position. (Strip printing generally occurs 45 prior to the flight proposed departure time if the flight is departing from within FDP2000 airspace. Otherwise, strips are printed 45 minutes prior to the time FDP2000 calculates the flight will enter FDP2000 airspace based upon the proposed departure time and the FIR ETE times filed within field 18 of the FPL.) ZAN ATOP: The system will accept a CHG message. If the system has no matching FPL on file, the CHG message will be routed to the "Supervisor Queue" and/or the "Sector Queue". From that point, any further action would require human intervention, i.e. sending out an RQL message (RQL = Request Flight Plan).	CHG messages fron IFPS (Eurocontrol) accepted	Yes CHG messages are accepted prior to departure. Cancel and refile messages are preferred and more common (especially if route has changed), but change messages are actioned. A CHG is used to transmit a change to one or more fields of previously sent fli	YES	Yes
En Route change after departure prior to oceanic entry	YES	Unacceptable	ZAN FDP2000: Yes; the FDP2000 system will accept a CHG message on a flight which has departed but not yet entered ZAN airspace provided that an FPL had already been received and the CHG message came from the same source as the FPL. (Important caveat although FDP2000 accepts a CHG message under this condition, the receipt of an AIDC message such as a CPL -Current Flight Plan- will overwrite any and all previously received route information whether it was in an FPL or CHG message. AIDC messaging is "ATC" coordination and therefore authoritative as to the aircraft's cleared profile.) ZAN ATOP: The system will accept, but not automatically process, a CHG message received for a flight which has departed but not yet entered ZAN ATOP airspace.	ACH-messages from IFPS (Eurocontrol) accepted.	Enroute route changes would only be initiated after a request from the flight crew. Any changes are then manually coordinated with Oakland Oceanic	YES	No
En Route after departure and in oceanic/non-surveil. airspace	YES	Unacceptable	ZAN FDP2000: Any CHG message which is received after FDP2000 has activated the flight plan (either thru controller action or receipt of AIDC coordination) will be rejected. ZAN ATOP: Any CHG message received for a flight after the flight has entered ZAN ATOP airspace will be sent to an error queue for manual processing.	Manual coordination and/or manual AFP message to IFPS (Eurocontrol)	This scenario is not applicable to Vancouver's airspace	CHG Message would be rejected by CAATS but changes could be manually enetered.	Not after inbound corrdination has commenced.
Processing Flight Plans - prior to departure (how ANSP transmits to downstream facilities)	UPON RECEIVING FPL THREE HOURS BEFORE DEPARTURE, MATMC CHECKS AND APPROVES/DISAPPROVES FPL AND SENDS ACK/REJ MESSAGES TO THE FPL SENDER + PLN (AIRSPACE USE AUTHORIZATION WITH TRUNCTURED VERSION OF FPL INFO) TO EN-ROUTE ATFM CENTERS WHICH THEN RE-ADDRESS PLNS TO ACCS CONCERNED.	Airline select addressee	ZAN FDP2000: FDP2000 does not send FPLs. ZAN ATOP: ATOP does not send FPLs.	Via IFPS	Only one FPL, or one CPL, or an FPL followed by a CPL can be sent for the same aircraft. NAM ICD II interface (using the AFTN circuit) is the method of flight plan data transfer between VR ACC and Seattle/Anchorage ARTCCs.	AFTN Link	Via AFTN.
Processing Flight Plans - after departure (incl. how ANSP transmits to downstream facilities)	SAME AS ABOVE BUT IF THERE IS A PREVIOUSLY FILED FPL, IT FIRST NEEDS TO BE CANCELLED BY CNL MESSAGE	• JCAB system is unable to receive change message after departure, so JCAB system can't send it to other ANSPs.	ZAN FDP2000: FDP2000 does not send FPLs. ZAN ATOP: ATOP does not send FPLs.	Manual coordination + AFP to IPFS (which then transmits ACH/ APL to affected ANSPs)	CPL's are transmitted to Seattle and Anchorage ARTCC's via the NAM interface. If after transmission of a CPL, a re-route is issued that now avoids that airspace, a cancellation message is sent.	AFTN Link. CNL Message is sent via AFTN Link.	Adjacent ATSUs are notified of aircraft approaching the common boundary by means of ABI messages, followed by CPL messages. A CNL is used ot notify of a route change which invalidates coordination.
Is advanced approal required	YES	Not necessary advanced notification except for national aircraft and the aircraft which doesn't belong to ICAO.	ZAN FDP2000: no. ZAN ATOP: no.	FPL from IFPS (Eurocontrol)	Advanced notification is not required	No	Advanced notification according to LoA with adjacent units, 30-50 minutes. No prior landing permissions except in exceptional diplomatic cases.
How much time is required for advanced approoval	THE TIMELINE IS THREE WORKING DAYS BEFORE FOR NON-SCHEDULED AND 40 DAYS BEFORE FOR SCHEDULED FLIGHTS PURSUANT TO GEN 1.2 RUSSIAN AIP. IN CASE OF EXCEPTIONAL CIRCUMSTANCES, THE TIMELINES CAN BE REDUCED.	Not required	Not applicable.	N/A	None	N/A	n/a
Date	2015-03-13	2015-04-07	2015-03-13		2015-03-16	2015-03-13	2015-04-08	2015-03-13