



International Civil Aviation Organization

WORKING PAPER

A39-WP/280
EX/122
30/8/16
Revision No. 1
7/9/16

ASSEMBLY — 39TH SESSION

EXECUTIVE COMMITTEE

Agenda Item 28: No Country Left Behind Initiative

QUICK RESPONSE AFTER EARTHQUAKE IN KUMAMOTO AIRPORT

(Presented by Japan)

REVISION NO. 1

EXECUTIVE SUMMARY

The Asia and Pacific Region has experienced natural disasters, such as earthquakes, and therefore, it is essential to take advance measures in preparation for combating disasters.

This paper details the best practices for quick response undertaken in Kumamoto after the earthquake hit the area. The instances cited are from the Kumamoto Earthquake and highlight the importance of the air transport in case of natural disasters.

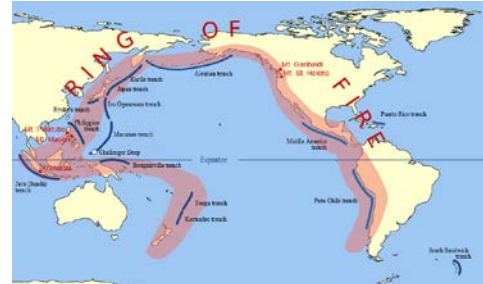
Action: The Assembly is invited to:

- a) note the information contained in this paper; and
- b) encourage States to consider preparing their emergency responses based on the experiences of natural disasters striking Japan.

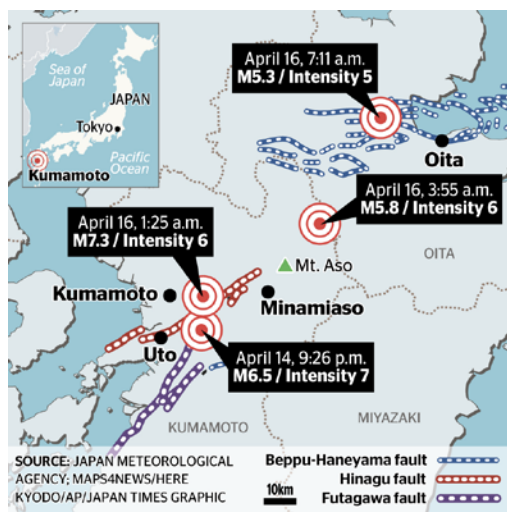
<i>Strategic Objectives:</i>	This working paper relates to the Air Navigation Capacity and Efficiency and Security & Facilitation Strategic Objectives.
<i>Financial implications:</i>	Not applicable
<i>References:</i>	None

1. INTRODUCTION

1.1 The gigantic tectonic plates which make up Earth's outermost layer are always on the move, sliding past and colliding with each other. This creates plenty of seismic activities, especially in the area around the Pacific Ocean known as the "Ring of Fire", which accounts for some 90% of the world's earthquakes. Japan is located in this "Ring of Fire" and has experienced a lot of earthquakes, like the Great East Japan Earthquake, which occurred in 2011.



1.2 On April 14th, an earthquake with a magnitude of 6.5 shook Kumamoto Prefecture*1 and neighbouring areas in Kyushu, Japan. Then, in the early morning on April 16th, a 7.3 magnitude earthquake struck the same areas. The powerful quakes caused damage to the buildings and other facilities of Kumamoto airport*2, which was near the epicenter of the strong quakes. Although the Kumamoto airport was unable to conduct normal operations due to the damage done by these quakes, special operations for disaster recovery were quickly undertaken at the airport.



*1) Kumamoto Prefecture: 181 million (population), 7,405 square kilometres (area)

*2) Kumamoto airport: 3000m x 45m (Single Runway), Air Traffic Control by the government

1.3 This paper details the chain of events in the week after two earthquakes struck the area. The emergency responses by relevant parties are described in sections 2 and 3. Besides, the lessons learned out of this disaster are detailed in section 4 and in the required actions to be taken.

2. THE CHAIN OF EVENTS

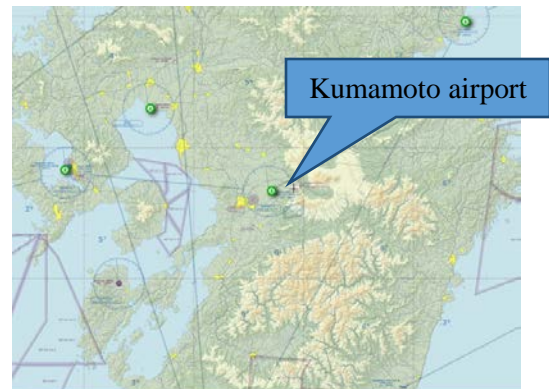
2.1 On April 14th, at 09:26p.m., an earthquake with a magnitude of 6.5 struck the airport. But luckily, the runway, radar and communication facilities were not damaged. After the end of normal operations at 09:30p.m., the air traffic information was continuously provided to helicopters in order that aviation activities such as search and rescue (SAR) operation could be undertaken.

2.2 On April 15th, a 24-hour relief operation for delivering supplies were started in Kumamoto city, following SAR. Some air carriers were forced to delay or cancel their flights one after another since flight crews at hotels were unable to take enough rest required before their duties. At other airports in Kyushu, operations were carried out as usual, because no damage was done to the airport facilities by the earthquakes. As the main land transport system in Kumamoto Prefecture such as the train network and highways were cut off, the relief air services between Fukuoka and Kagoshima were undertaken and continued by air carriers.



2.3 On April 16th, at 01:25a.m., an earthquake with a magnitude of 7.3 occurred. Although the runway was not damaged, the terminal building was closed due to the damage and all passenger flights were canceled. Air traffic controllers were evacuated from the Air Traffic Control (ATC) tower and the aircraft engaged in rescue operations were provided with necessary instructions from a separate room. Support related to transportation was given to Disaster Medical Assistance Team (DMAT). The relief supplies by Self-Defense Forces (SDF) aircraft were provided. A 24-hour relief operation was started at the neighboring Oita airport, which was continued until April 19th.

2.4 On April 17th, all passenger flights were canceled in Kumamoto airport. On the other hand, cargo relief services for relief supplies were carried out by Japan Airlines (JAL).



2.5 On Monday, April 18th, all passenger flights were canceled in Kumamoto airport. US Armed Forces “Osprey” arrived and distributed relief supplies.

2.6 On April 19th, at 07:30a.m., services at the ATC tower were resumed and at 07:43a.m., the first passenger flight after restarting operations arrived from Tokyo international airport at Haneda (total 19 flights arrived during the day). At 03:00p.m., departure flights from Kumamoto airport resumed operations (6 departure flights in total in the day) and at the same time, partial operation was started again at the terminal building.

3. SWIFT RESPONSES

3.1 Responses by the Headquarters in Tokyo;

3.1.1 Immediately after the earthquakes struck on April 14th and 16th, the crisis management officer made an emergency call to the executives of the Civil Aviation Bureau (CAB) and checked the damage situation of the surrounding area of the airport including Kumamoto airport and other airports. Quite a variety of information as listed below was gathered and sorted out.

- a) Any abnormalities of the runway, aeronautical lights, radio facilities, air traffic control facilities, air traffic control services and the terminal building;
- b) Safety of the airport staff, operating situation of the airport;

- c) Any damage to aircraft of the air carriers, safety of the staff and operation schedules.

3.1.2 The above information was reported to the senior executives of the Ministry by the executives of CAB.

3.1.3 After the overall damage situation was checked, actions were taken toward the full recovery of airport operations. The operation of the airport to support the restoration activities in the devastated area was implemented, as below;

- a) Since misunderstanding on the closure of the airport spread and a number of inquiries about the airport operations were received even from SDF, the headquarters asked for cooperation of the mass media to report on TV that the airport was continuously used for transportation of relief supplies by SDF and other organizations in order to clear such misunderstanding.
- b) In order to properly manage issues in relation to rescue activities and cargo transportation by SDF, the US, Korea and others, the headquarters decided to provide ATS on 24-hour schedules at Kumamoto airport (usually 14-hour operation from 07:30a.m. to 09:30p.m.) and at neighboring Oita airport (usually 15-hour operation from 07:30a.m. to 10:30p.m). In addition, in order to materialize the 24-hour operation schedules at the airports, ATS staff were dispatched to Kumamoto and Oita from around the country.

3.2 Responses by the Air Navigation Service Provider (ANSP);

3.2.1 While the runway and air navigation facilities of Kumamoto airport were not damaged and ANSP was able to operate them normally, some equipment fell down and documents scattered in the ATC tower and the services were suspended for a while. The emergency risk discriminators were immediately dispatched to inspect the ATC tower facilities and identified that those facilities were usable. However, as a series of aftershocks occurred intermittently, the aerodrome control services from the ATC tower were forced to discontinue. To take care of this situation, the flight information services were provided from the meteorological office located at another low rise building for four days. Furthermore, ATC light gun signals and portable radio equipment were used at the first stage, then simplified communication equipment which ensures usual quality level of radio communication for air-to-ground and ground-to-ground communication and recording of all communications was installed.



[Control Tower]



[Temporary Flight Information Service]



[Simplified Communication Equipment]



[Delivery of EVA]

3.2.2 On the other hand, an Emergency VFR system for ATC (EVA) was transported from Fukuoka airport to Kumamoto airport in preparation for coping with any further contingency situation.

3.3 Responses by the Airport Operator and Airlines;

3.3.1 As mentioned above, a part of the terminal building for domestic passengers was damaged by the earthquakes, all passenger flights were canceled from April 16th to 18th. Because it was difficult to repair and fully restore the existing terminal building in a short period of time, efforts were made to resume the operation of civil aviation using temporary alternative facilities. More specifically, the operations restarted only for arrival flights from the morning of April 19th and the corridors and exits different from the usual ones were used after their arrivals and then the operations for departure flights restarted as well from 03:00p.m. on the same day. Temporary check in counters and baggage inspection area were located at the parking lot of the airport.



3.3.2 On April 19th, thanks to quick recovery work, it became possible to resume services partially at the terminal building after confirmation of safety requirements.

4. LESSONS LEARNED

4.1 It was critical to restore the air transportation in shortest possible period of time, because, in this case, the railways and highways were immensely damaged by the earthquakes. In addition, it was reaffirmed that the airports played an extremely important role in the disaster recovery operation as the base for relief and life-saving activities, SAR, emergency transport of relief supplies and personnel.

4.2 Japan has been taking essential countermeasures, such as swift and accurate information gathering on the disaster, preparation of emergency equipment and conducting training programs to operate such equipment. This was done on the basis of the lessons learned from the Great East Japan Earthquake, which occurred in 2011. Such preliminary measures taken beforehand enabled us to resume the air transportation so early.