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ASSEMBLY — 38TH SESSION

TECHNICAL COMMISSION

Agenda Item 38: Other issues to be considered by the Technical Commission

THE IMPORTANCE OF EMERGENCY EQUIPMENT FOR ATC IN PREPARATION FOR NATURAL DISASTERS

(Presented by Japan)

EXECUTIVE SUMMARY

Japan, where many earthquakes occur, has compiled the basic policy of the role of airport in earthquake disaster and the necessity of improvement of earthquake protection at airports in 2007, based on the past experience. We have implemented the improvement of airports which are corresponding to the disaster, and have started the preparation of emergency equipment for air traffic control (ATC) over 10 years ago. We have regularly conducted deployment training one a year and have prepared manuals for emergency operation.

Sendai airport was seriously damaged by Tsunami caused by Great East Japan Earthquake on 11 March 2011. Although the disaster was above assumptions, the operation of passenger flights was recovered after almost a month and it made a significant contribution for recovery in the region from the catastrophe.

This paper reports the backgrounds of the usage of crisis management system and emergency equipment for ATC which enabled for early resumption of passenger flights, among the restoration of function of airport, and describes the importance of the risk management.

Action: The Assembly is invited to:
a) encourage states to share their best practices for crisis management;
b) note the importance and the necessity of proactive measures against events, including natural disasters;
c) encourage states to consider their emergency response framework and preparing their emergency equipment for ATC.

Strategic Objectives:	This working paper relates to the Environmental Protection and Sustainable Development of Air Transport Strategic Objective.
Financial implications:	Not applicable.
References:	Not applicable.

1. INTRODUCTION

1.1 In Japan earthquakes occur frequently, and we have experienced that Airport played important roles in the past earthquake. Based on the experience we conducted extensive study about the role of airport in earthquake disaster. And we developed a basic policy for them in 2007. The basic policy says that recovery of passenger regular flight operation is highly prioritized at the early stage after the earthquake disaster as for bases of rescue activities, for the function of transportation of critical material or support person, and for sustainability of economic activities.

1.2 Following the basic policy, Japan got to work on reinforcement measures against earthquake such as liquefaction countermeasure work for runway, prepared the emergency equipment for ATC and has been training constantly. These actions enabled early resumption at Sendai airport, which was seriously damaged by Tsunami caused by Great East Japan Earthquake on 11 March 2011. And the resumption of infrastructure of the airport made a significant contribution for recovery in the region from the catastrophe.

2. DISCUSSION

2.1 It is important to prepare alternative equipments to secure a certain ATC function of an airport when a Radar Approach Control function of the airport or a control tower of the airport is destroyed by catastrophe such as earthquake, fire, or others, and when the recovery of the function is estimated to take a long time. Japan developed Transportable Radar Control System (TRCS) and Emergency VFR system for ATC (EVA) in 1997 as part of the crisis management system. Currently JCAB has owned three sets of the EVA equipment and TRCS equipment each.

[Fig.1, TRCS]

2.1.1 Transportable Radar Control System (TRCS) is transportable by a medium size truck or helicopter, and this is composed of a compact shelter with a foldable antenna. (Fig.1)

2.1.2 Emergency VFR system for ATC (EVA) consists of lifting equipment, communication shelter, and control tower shelter for ATC (Fig.2). It is transportable by a medium size truck or helicopter. The control tower shelter and communication shelter have function as VFR operation room.

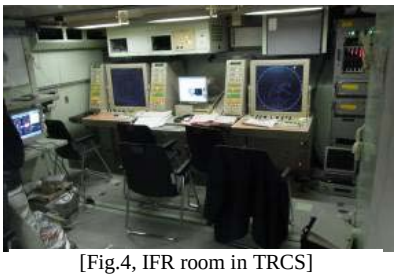
[Fig.2, EVA]

2.1.3 Temporary VOR/DME system consists of 7 sets of shelter and can be transported by a medium size truck.

2.1.4 We regularly conduct deployment training of these equipments once a year and prepare for an affected time. When we conduct the training, we call and select the participants from nationwide. Because we cannot know where disaster happens and it will increase possibility for the smooth deployment if some of the staff in each office knows how to use it. Technical staffs are trained how to operate emergency engine and radar system. Air traffic controller confirms how to operate the console. We also establish regulation and prepare manuals for the smooth operation in time of disaster. Meanwhile we also use them as an alternative facility for temporary use when we renew equipments at an airport.

[Fig.3, Sendai Airport attacked by tsunami]

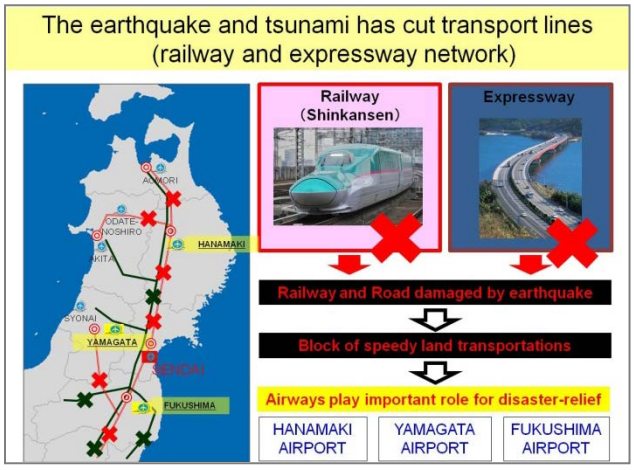
2.2 Sendai Airport was attacked by big Tsunami caused by Great East Japan Earthquake on 11 March 2001. The earthquake was the strongest one with magnitude 9.0 on the Richer scale and became the historical record around Japan. After 1 hour later of the earthquake, big Tsunami attacked Sendai airport with rubbles and cars, etc. The scale of the Tsunami was larger than we expected. Sendai airport completely halted all function including ATC and navaid services.



[Fig.4, IFR room in TRCS]

2.2.1 About the emergency equipments for ATC, it was storage at Tokyo international airport and was shipped to Sendai airport after the installation of map for radar or setting of assignment of radio channel. At Sendai airport we conducted site survey for the installation in consideration of afflicted area, and installed equipment and lightning rod, etc.

2.2.2 With these efforts, passenger flight was recovered as relief service on April 13, after about a month from the disaster. (Fig.4) This early recovery of the airport became a major step for reconstruction in the afflicted district from the earthquake and Tsunami. It also functioned as infrastructure of transportation toward the disaster area for personnel of volunteers, or companies and government agencies that were in charge of reconstruction. Then the TRCS had been used for 15 months until a Radar Approach Control was manufactured and was installed again. It provided a same traffic volume as many as the disaster before and was a great contribution for provision of an ATC service continuously.

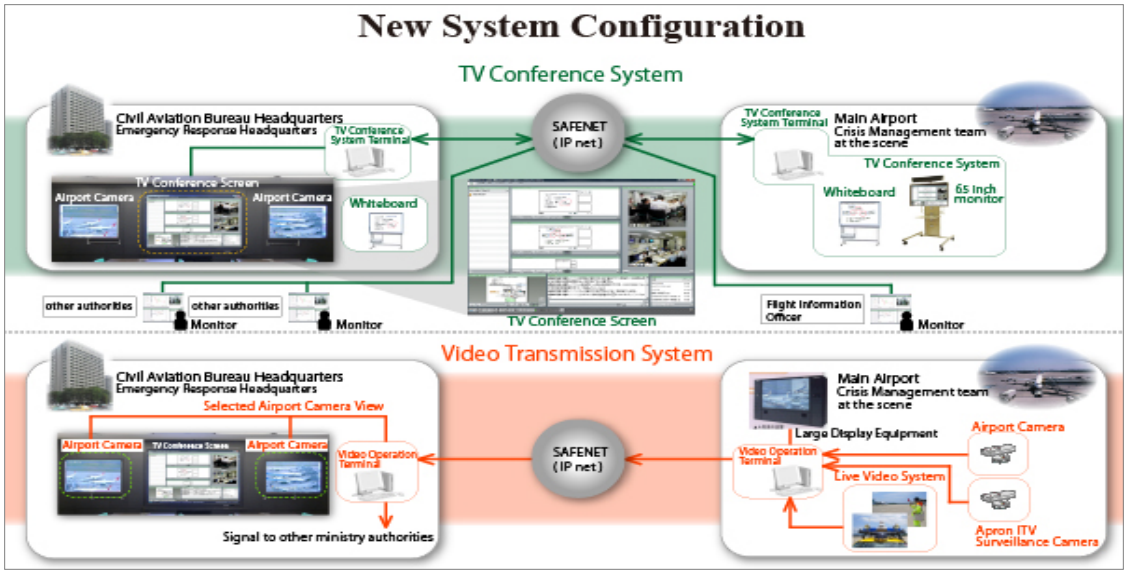


2.3 Sendai Airport was damaged tremendously and the land transportation network was blocked, therefore, the Hanamaki, Yamagata and Fukushima airports, which escaped deadly damage, drew attention as hub airports for the disaster-relief activities. They were available for the aircrafts with a lot of humanitarian personnel and relief supplies for disaster recovery.

2.3.1 The air traffic services of these airports are operated by Civil Aviation Bureau of Japan (JCAB). Soon after the disaster, the JCAB decided to extend service hours for these airports from 11.5 hours to 24 hours a day. And a total of 29 staff, who had experience working at these airports, were dispatched to these airports from 13 March to 11 June in order to fully support the aviation activities for disaster relief.

2.3.2 The JCAB established the new crisis management system to address aircraft accidents or disasters two and a half years ago, and this system was a great help during disaster recovery process. We established the following objectives in developing this evolutionary new crisis management system:

a) transmission of information accessible in “0” time; and
b) making the transition from spoken information to visual information for real-time awareness of the situation.



2.3.3 This new crisis management system consists of the TV conference, audio conference, and video transmission functions. In the crisis management and countermeasures room of the JCAB Headquarters, we can make awareness of the situation in the event with the TV conference screen and the airport camera view screen in 30 seconds after the event. Especially, the TV conference screen displays several information boxes and has a lot of effective functions, such as live video from each staff, chatting capability and sharing the information filled out on each whiteboard. We can also share the information between involved staff by uploading and downloading the files with the various formats of WORD, EXCEL and so on. The effects using these functions are as follows:

a) visualization of information enables the response team to share accurate information quickly.
b) the response team's initial reaction is made faster; and
c) visualization of information makes it easy and quick to grasp the situation and to give prompt and appropriate instructions, achieving more effective work.

3. CONCLUSION

3.1 Early resumption of operation at an airport is the most important for rapid recovery from disaster. JCAB shares this experience as a lesson. The damage of the ATC equipments or navaid equipments from the disaster takes time to recover, so preparation of emergency devices is an effective means.

3.2 Considering the disasters such as earthquake or flood which is caused by recent abnormal climate all around the world, early restoration of transport infrastructure is also important for neighboring countries. Each country encourages taking action to go with crisis management.

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