

# Title 3 Air Transport

## Chapter 1 Air Traffic Accident Trends

### 1 Air Traffic Accidents in Recent Years

In Japan there were 15 incidents of air traffic accidents involving commercial aircraft in 2011. There were 7 fatalities and 14 injuries. In recent years, aircraft accidents involving large aircraft resulting from air turbulence have been contained in several cases per year, and the majority of such accidents involve small aircraft.

**Transition of Number of Air Traffic Accidents and Number of Injuries and Fatalities  
(Commercial aircraft)**

Classification	Number of occurrences								Number of casualties	
	Large Aircraft	Small Aircraft	Powered Ultralight Aircraft	Helicopters	Gyro planes	Gliders	Airships	Total	Fatalities	Injuries
Year	Cases	Cases	Cases	Cases	Cases	Cases	Cases	Cases	Persons	Persons
2007	5	3	4	7	0	4	0	23	10	25
2008	3	6	2	3	0	3	0	17	7	10
2009	6	2	1	7	0	3	0	19	9	7
2010	0	4	2	4	0	2	0	12	17	3
2011	2	8	1	3	0	1	0	15	7	14

Note

- 1 Data by Ministry of Land, Infrastructure, Transport and Tourism
- 2 The value by the end of December each year.
- 3 Include accidents related to Japanese aircrafts occurred outside of Japan. (1 in 2009, 1 in 2011)
- 4 Include accidents related to foreign aircrafts that have occurred in Japan. (1 in 2007, 1 in 2008, 3 in 2009)
- 5 The number of casualties and the number of accidents are not including those in-flight natural deaths, death according to act or death due to abuse of self or others.
- 6 The number of deaths is the number of deaths within 30 days, missing persons etc.
- 7 Aircraft maximum take off weight: a large airplane of more than 5.7 tons, small plane of less than 5.7 tons.

### 2 Mishaps Involving Air Traffic Safety During 2011

#### o Safety Issues Involving Air Carriers

Passenger fatalities in specific domestic air carriers (domestic air carriers operating air transport services using aircrafts with the number of seats more than 100 or the maximum takeoff weight exceeding 50 000 kg) in Japan have not occurred since the mountain Osutaka crash of Japan Airlines Flight 123 of 1985.

In 2010 there were 867 cases of accidents, major incidents, and safety trouble that Japanese air transport operators were required to report.

## Chapter 2 Overview of Current Air Traffic Safety Measures

### 1 Conversion to Comprehensive Safety Management

#### ○ Introduction of State Safety Program (SSP)

Requested by the annexes to the Convention on International Civil Aviation which were revised in November 2010, the consideration of the establishment by the end of 2013 of the State Safety Program in the field of aviation with oversight safety degree indicators usage, focusing supervision on particularly unsafe elements, implementing Safety management training safety management training for operation businesses (air transport service operators, Airport operators, air traffic services implementers) is promoted.

### 2 Development of air traffic environment

#### ○ Measures Against Runway Incursion

In order to prevent the reoccurrence of runway incursion trouble, counseling was received from external experts and countermeasures are promoted to cover the prevention of inconsistency between the guidance manual concerning control terminology for air traffic control and pilots, and pilot communication with air traffic control. The measures also deal with the “tangible” and “intangible” sides of improving systems that visually show and transmit the runway occupancy condition to air traffic control or the pilot.

#### ○ Promotion of prevention of bird strikes to aircraft

Bird strike Prevention Measures Review Committee consisting of the experts on the bird ecology and airline carriers held a study group considering the analysis and countermeasures of bird strikes. In fiscal year 2011, as a new measure, a bird strike database information was created to start sharing information among the bird-strike relevant parties. In addition, in order to develop a control method according to the ecology, for cases when an unknown type of bird crashes, the bird-type specification by DNA / feather by expert opinion is being promoted. Furthermore, at Tokyo International Airport bird sensing devices (such as bird detection radars) were introduced in order to promote the strengthening of the surveillance of avian ecology.

### 3 Ensuring Safe Operation of Aircraft

#### ○ Strengthening of Supervision of air carriers

Important check points were decided for every airline company, and along with frequently implementing technical and moreover systematical inspection of premises from a fulltime examination structure, effective safety audits were implemented for airline companies such as expeditious premise inspections in cases of occurrence of trouble involving safety had occurred.

#### ○ Implementation and Strengthening of the Transport Safety Management System

Based on the “Transport Safety Management System” introduced in October 2006, a safety management system was established by the operators, which was taken action for unification by management executives to on-the-site workers as a whole. The country carried out the evaluation for transport safety management to 87 companies by the end of December 2011 to confirm the status of implementation.

### 4 Ensuring Aircraft Safety

#### ○ Improvement of Technical Standards of Maintenance and Examination of Aircraft

In order further to improve the safety of the aircraft, the information obtained from foreign governments to contribute to research and technology for aviation safety is collected and analyzed, in addition to providing information, which needed for aircraft operations, technical standards on the safety of aircraft and equipment on the basis of such information have been developed.

## Topics

### About the status of efforts ensuring the safety of each transport sector in the circumstances of the Great East Japan Earthquake

#### 1) Road Traffic

- Counter-measures for non-operational traffic signals

Damage to traffic safety facilities occurred due to the earthquake and tsunami, such as the damage to the pillars of traffic signals and submergence of the equipment, particularly in the hard-hit Iwate, Miyagi and Fukushima<sup>8</sup> prefectures 692 traffic signals were damaged, out of which 440 were non-operational<sup>9</sup>. The police strived to ensure the safety and smoothness of traffic, by placing police officers, who performed traffic control signaling by hand, on major intersections.

Also the restoration work of traffic signals was advanced, and by March 2012 all of the non-operational traffic signals were restored, except those signals that are going to be restored in accordance with the urban development and reconstruction.

Since it was difficult for the police to place officers at all the intersections with non-operational traffic signals, the development of additional signal power devices as backup power is being promoted to prevent the signal outages due to power failure in the event of a disaster.

- Damaged traffic signal (Kamisu, Ibaraki Prefecture)



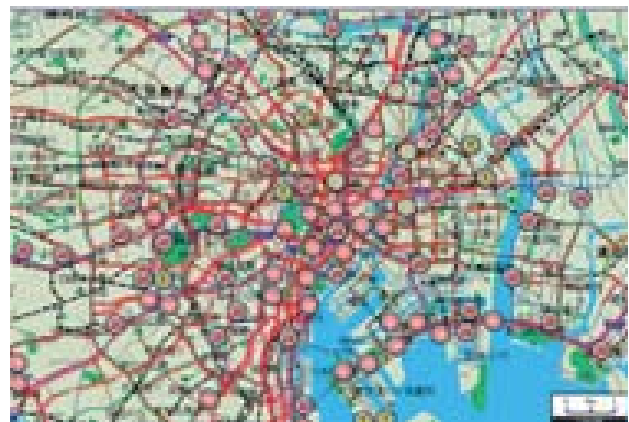
- Traffic control at intersections where traffic signal was non-operational (Miyako, Iwate Prefecture)



- Efforts to provide traffic information after the earthquake

Immediately after the disaster occurrence, the police check the damage conditions on highways and general road and confirmed the traffic situation, by taking advantage of helicopter television system and off-road bikes, and under close collaboration with road administrators quickly gathered road information. Based on this information, the emergency traffic routes were designated and traffic information regarding their implementation zones, along with vehicles allowed to pass, and traffic conditions was provided in appropriate and timely manner by using information boards and traffic websites, as well as through the Japan Road Traffic Information Center Foundation, and media organizations.

- Traffic information displayed in car navigation systems immediately after the disaster occurrence



<sup>8</sup> Except within the warning area in Fukushima Prefecture.

<sup>9</sup> Refers to the condition in which a signal is not displayed.

○ Status of restoration works on the affected roads and status of the efforts for the recovery

Due to the effects of the Great East Japan Earthquake, mainly in the Tohoku region, the highways and national roads, under direct control, were closed to traffic because of the damage; especially National Highway No. 45 on the Pacific Ocean coast, which was cut off at many places.

In order to strategically promote the quick restoration of the road network and to create an approach to the Sanriku coastal area that was scattered by the tsunami, the "teeth of a comb" strategy was developed. On the day after the earthquake, the longitudinal axis of the Tohoku Expressway, National Highway route 4 was ensured sequentially until March 15<sup>th</sup>, the horizontal axis of Route 15 from there to the rest of the coast of Sanriku until secured. In addition, Coastal National Highway routes 6 and 45 developed into emergency restoration projects, and on March 18<sup>th</sup>, one week after the earthquake, up to 97 percent of routes 6 and 45 were complete and open with the obstacles from the road removed.

After that, regarding the highways, the general service on the Tohoku Expressway started from March 24<sup>th</sup>, and on April 1<sup>st</sup>, general service on the Joban Expressway, except the segments within the warning area of TEPCO Fukushima Daiichi Nuclear Power Station, also started. On April 29<sup>th</sup>, the restoration within the warning area of primary emergency on the Joban Expressway was completed as well and the passage of emergency vehicles became possible.

Regarding routes 6 and 45, on April 10<sup>th</sup>, about one month after the earthquake, the outlined emergency restoration was accomplished, and on May 8<sup>th</sup>, the emergency restoration, including the detour routes for the temporary "site inspections", at the caution zones of the Nuclear power plant, was completed. On June 29<sup>th</sup>, the long detours for the National Highway No. 45 Koizumi Bridge (Kesenuma, Miyagi Prefecture), and on July 10<sup>th</sup>, for Kesen Bridge (Rikuzentakata, Iwate Prefecture) were fixed by installing temporary bridges. On August 31<sup>st</sup> all lanes became capable of passing, including the nuclear power plant warning areas on Route 6, and on December 26<sup>th</sup>, all lanes became ready for two-lane traffic. On February 3<sup>rd</sup>, 2012, alternative one side way traffic on National Highway No. 45 became possible and all the roadblocks on the national highways under direct control have been resolved.

In addition, immediately after the disaster occurrence, for the convenience of road users and to ensure safe and smooth road traffic, we proceeded to provide road disaster information by utilizing the Internet and other media.

○ Efforts for the recovery of National Highway route 45, Kesen Bridge (Rikuzentakata, Miyagi Prefecture)

(Immediately after the disaster)



(The temporary bridge after its opening)



## 2) Railway Traffic

- Status of restoration works of the affected railways and status of the efforts for the recovery

Due to the occurrence of the Great East Japan Earthquake, many Tohoku Shinkansen routes and other Tohoku lines were affected, especially the routes in the coastal areas have suffered extensive damage due to the outflow of the lines and stations.

Regarding Tohoku Shinkansen, since the earthquake resistance measures of civil engineering structures had been taken in advance, serious damage such as viaduct collapse was evaded and the operation of the whole line restarted on 29 April 2011.

Regarding Sanriku railway, for the segment that became disconnected, the restoration work is currently taking place and the resumption of operation of South Riasu line and the whole North Riasu line is planned for around April 2014.

Regarding the recovery of six JR East affected lines (Yamada line, Ofunato line, Kesen'numa line, Ishinomaki line, and Joban Senseki line) deemed necessary since being integrated with the urban development, the restoration of railway policy is determined along with the local governments, in conjunction with the transfer points of the city, and after formulating the development plan, including reconstruction of rail routes and changes.

Among these: Ishinomaki line is aiming to resume operation in the beginning of the fiscal year 2013 for the section from Onagawa station to Watanoha station, except for Onagawa station. Senseki line is aiming to resume the whole line operations in 2015 due to route relocation. In addition, due to route relocations, operations from Soma station until Watari station of Joban line are expected to resume in about three years from the start of rail construction.

- Sanriku Railway North Riasu line during rail restoration work between the Rikuchunoda station and Tanohata station, as well as the state at the time of service resumption

[During rail recovery efforts]

(Installation started February 1st, 2012)



[When operation resumed]

(April 1st, 2012)



## 3) Maritime Traffic

- Status of restoration works of the affected ports and status of the efforts for the recovery

All the Pacific Ocean ports from the port of Hachinohe, Aomori Prefecture to the port of Kashima, Ibaraki Prefecture were affected, drifting debris caused by the tsunami buried and obstructed the routes, therefore, all port functions have stopped completely.

As emergency recovery, in order for the ships transporting emergency supplies to be able to enter ports, Japan Coast Guard, Regional Development Bureau and Port administrators were working on the opening of the passages by removing the obstacles. In the full-scale restoration, the "Industries and logistics reconstruction plan" was formulated in order to



- View of the work process to remove an obstacle (trailer) for passage opening (Sendai Shiogama Port, Miyagi Prefecture)

realize the reconstruction of the regions, for the port facilities of particular importance the full-scale restoration of all facilities will be possibly completed within approximately two years.

As of current date, March 31st, 2012, 275 berths out of 373 public quay berths (deeper than 4.5m depth) in 21 harbors, included in the area from Hachinohe Port to the regional port of Kashima harbor, have become available but with limited usage.

#### 4) Air Traffic

- Restoration Status of the affected Sendai airport and status of the efforts for recovery

Sendai Airport was severely damaged by the Tohoku-Pacific Ocean Earthquake and the subsequent tsunami, especially because of the inundation of various facilities and debris, such vast amount of vehicles brought by the massive tsunami, Sendai Airport has become unusable.

After the tsunami warning was lifted, in order to ensure the functionality of the base for transport of relief supplies to the victims, emergency restoration work started immediately, the functionality of the transportation of goods was ensured from March 16th, and the actual service of commercial aircrafts was resumed on April 13th,

- Situation in Sendai Airport immediately after the disaster and view of the runways after the restoration

[Immediately after the disaster]



[Runways after the restoration]



- Efforts to provide information in air traffic after the earthquake

Regarding the airports in the Tohoku region, amid Sendai airport becoming unusable due to the Great East Japan Earthquake disaster occurrence, allowing an immediate 24-hour operation of three airports Hanamaki, Yamagata and Fukushima (with support personnel dispatched from aviation offices nationwide), served as a base for rescue plane activities and played a role of the alternative transportation hub during the period of time when the expressways and Shinkansen routes were unavailable.