

Part 3: Air Traffic Safety

1. Achieving a Society with No Air Traffic Accidents

Reducing air traffic accidents.

Preventing safety problems that might cause accidents.



2. Objectives Set in Air Traffic Safety

To prevent the occurrence of air traffic accidents and continue to hold the record of no fatal accidents caused by specified Japanese air carriers since 1986.



3. Measures for Air Traffic Safety

<Three viewpoints>

- 1) Restoring confidence in air transport safety
- 2) Expanding air transport capacity
- 3) Establishing safe and efficient air traffic systems



<Six pillars>

- i) Improving the air traffic environment
- ii) Securing aircraft operational safety
- iii) Ensuring aircraft safety
- iv) Enhancing rescue and emergency services systems
- v) Promoting victim support
- vi) Enhancing R&D and study activities

Section 1: Achieving a Society with No Air Traffic Accidents

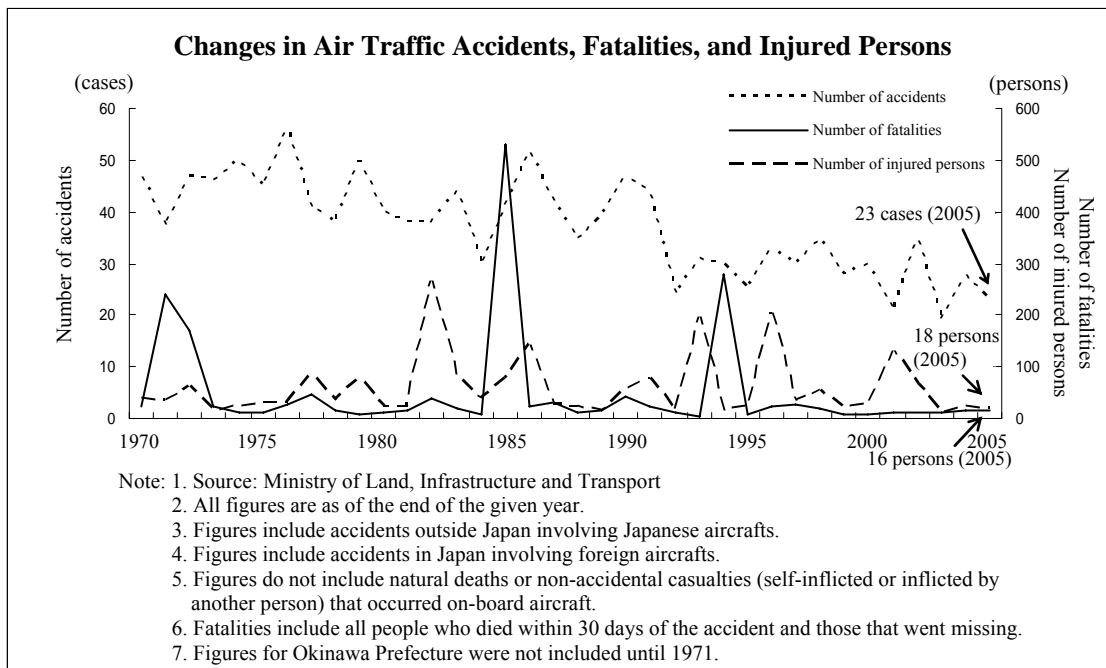
In order to reduce air traffic accidents and prevent safety problems that might cause accidents, the government will make constant efforts to implement measures for air traffic safety.

I. Current Status of Air Traffic Accidents

To keep pace with the growing size of aircraft and the increasing volume of air traffic, the government has been developing several measures to ensure air transport safety and to prevent accidents. These include improving aviation safety facilities, modernizing aviation safety services, improving systems for ensuring the safety of aircraft, and improving air traffic information systems.

As a result of these measures, the number of aircraft accidents in Japan has been decreasing on a long-term basis. There are two to three accidents per year by large aircrafts, mainly caused by air turbulence, and the majority of accidents are by small aircrafts. Although there have been no fatal accidents caused by specified Japanese air carriers (Japanese air carriers that operate air transport services using aircrafts with a number of passenger seats over 100 or a maximum takeoff weight of 50,000 kilogram) since 1986, there have been notable safety problems due to human error or mechanical problems, including the disobeying of control instructions at New Chitose Airport in January 2005, and aviation following the wrong elevation indicator instructions in June of the same year.

The number of aircraft accidents involving light aircraft has remained relatively steady with only 10 or so accidents in recent years, and the majority of these accidents have been caused by pilot carelessness or basic operational errors.



II. Objectives Set in the Fundamental Traffic Safety Program

[Numerical objective] Zero fatal accidents caused by specified Japanese air carriers

Once an air traffic accident occurs, there is a risk of it becoming a serious accident and every citizen has the possibility of becoming involved in one. By comprehensively and vigorously promoting the various measures in Section 2, the government is to prevent the occurrence of air traffic accidents and continue to hold the record of no fatal accidents caused by specified Japanese air carriers, which has been kept since 1986.

Section 2: Measures for Air Traffic Safety

I. Viewpoints in Considering Future Measures for Air Traffic Safety

Although there have been no fatal accidents caused by specified Japanese air carriers since the crash of a Japan Airlines plane in 1985, there have been notable safety problems caused by human error and mechanical problems with Japanese airliners since January 2005. It is an urgent issue to prevent the recurrence of non-fatal but serious safety problems, which can be regarded as seeds of large accidents, and restore public confidence in air traffic safety.

Looking at air traffic conditions, the problems of congestion and delay due to the heavy inbound traffic of aircrafts in airports and in the air have become serious. While air traffic volume is expected to increase further in the future, it is an urgent issue to establish a safer and more efficient air traffic system in the air, as well as to increase the capacity of airports including the project of further expanding Haneda Airport.

From these standpoints, the government will work to improve safety measures in various fields, by improving air transport environments, ensuring the safety of aviation systems, ensuring the safety of aircrafts, improving rescue and emergency services systems, and enhancing R&D and study activities. The government will then comprehensively and systematically promote these measures.

II. Measures to Be Taken

[Priority Measures and newly-introduced measures in the Eighth Program]

- Improving the New Air Navigation System (1 (1) a)
- Enhancing air traffic services (1 (1) c)
- Expanding airspace capacity and promoting the effective use of airspace (1 (2) a, b)
- Strengthening disaster control measures for airports and aviation safety facilities (1 (4))
- Strengthening supervision over air carriers (2 (1))
- Shifting the emphasis to prevention in traffic safety administration (2 (2))

1. Improving the air traffic environment

In order to address increasing air transport volume, while ensuring the safety of air traffic, the government will promote improvement of the air traffic environment by steadily promoting the improvement of the New Air Navigation System as well as the improvement of the airspace and air routes that facilitate more advanced air control based on the system.

Specifically, the government will comprehensively promote improvements to airports and aviation safety systems such as air traffic control facilities and aviation safety facilities, based on the Priority Plan for Social Infrastructure Development.

Furthermore, in order to deal more safely and appropriately with air traffic, which is becoming more complex and large-scaled with the development of the airports, there is a need not only to increase the

capacity of airspace but also to operate the limited airspace efficiently. Taking this situation into account, the government will promote the improvement of airspace vigorously.

(1) Improving aviation safety systems and improving services

To build air traffic systems that appropriately respond to increasing traffic volume and the diversifying needs of users, while prioritizing the security of air traffic safety, the government will steadily promote improvement of the "New Air Navigation System" including the Multi Functional Transport Satellite (MTSAT)

As for existing aviation safety systems that would require ongoing improvement or update, the government will promote their effective usage, and implement a gradual elimination of ground navigation aid that can be reduced according to the progress of the shift to the New Air Navigation System.

The government will also make qualitative improvement of the Air Traffic Service (ATS) offered to air transport companies by effectively utilizing the existing stocks.

a. New Air Navigation System

(a) Improving advanced control systems

The government will promote the improvement of advanced control systems designed to improve control capability and safety, by linking the aviation control information processing systems to utilize various control support functions including the function of ranking passing and arriving airplanes, and to reduce the workload of the controllers by introducing an integrated interface for preventing human-errors.

(b) Improving the Air Traffic Management (ATM) system

The government will promote the development of the ATM system that improves the safety and efficiency of air traffic by comprehensively operating the ATS, Air Traffic Flow Management (ATFM) and Air Space Management (ASM). The government will also introduce a simulation function for designing air routes and airspace, and strengthen collaborative decision making (CDM) between air transport companies and control stations to advance the systems.

(c) Improving aeronautical ground light and radio facilities

At airports, the government will promote the installation of Secondary Surveillance Radar Mode S (SSR Mode S) to strengthen aircraft surveillance in high-traffic airspace.

(d) Improving flight inspections

In view of the fact that flight inspections are vital for ensuring air traffic safety, the government will gradually replace the aging YS-11 aircraft that are currently used for flight inspections. In addition, the government will promote a new and improved flight inspection system to prepare for the introduction of the Area Navigation (RNAV) and the New Air Navigation System.

b. Existing aviation safety systems

(a) Improving existing facilities

With a view to improving the convenience of air transport through higher rates of service and on-time flights, taking cost-effectiveness into account, the government will promote the

development of the Instrument Landing Systems (ILS), VOR³/DME⁴ systems and lights for precise approaches at new airports, as well as upgrades of ILS to the high category for the improvement of takeoff and landing performance at existing airports.

The government will also proceed to introduce control support functions and other systems that are designed to process information influencing the permission of use of runways and to alert controllers based on such information, aiming to prevent accidents and problems caused by human error in air traffic control.

(b) Reducing navigation aid

The en route configuration of aircrafts is expected to shift to satellite-based RNAV (GNSS⁵) in the future. Since this navigation environment will soon enable discontinuance of the use of Non Directional Radio Homing Beacons (NDB), the government will gradually phase out NDBs.

c. Enhancing air traffic services

(a) Improving the RNAV navigation environment

The government will sequentially introduce the RNAV routes, which enable the flexible setting up of flight routes, throughout Japan, and work to improve the aviation efficiency by making the flight routes more direct, expand airspace capacity by increasing the number of routes, and take safety measures such as one-way traffic.

So that the benefits of operation by RNAV can also be enjoyed in airports on remote islands, the government will sequentially improve the operation environments utilizing the MTSAT Satellite Based Augmentation System (MSAS).

By utilizing these RNAV routes, the government will rebuild the flight route network nationwide.

(b) Setting up Aeronautical Information Services (AIS) centers

Since RNAV, which will become mainstream in the future, aviates by carrying out satellite positioning and electronic computation onboard, the government will respond to these aviation technologies appropriately and advance the computerization of air information that complies with international quality standards. The government will also set up AIS centers and operate them smoothly to strengthen the systems for the quality control and provision of such information.

(c) Safety measures of small aircrafts

The government will improve the environments for the active provision of information through the utilization of existing stocks and the achievement of aviation using an instrument flight method that utilizes the characteristics of helicopters.

The government will also promote the set up of adequate obstruction markings (collective term for obstacle lights and daytime obstruction markings) for obstructions in specified areas to prevent

³ VOR: VHF Omnidirectional Radio Range

⁴ DME: Distance Measuring Equipment

⁵ GNSS: Global Navigation Satellite System

collisions with electrical power cables at sea or in the mountains, and provide information on obstacles for air transport companies.

(2) Improving airspace

To upgrade air traffic control, the government will carry out a drastic reorganization of the airspace and air routes utilizing the ATM function and RNAV, and increase and effectively utilize the capacity of airspace.

a. Expanding airspace capacity

(a) Airspace on sea

The North Pacific route is especially congested, and about half of air services from Japan cannot fly on their desired route or altitude due to airspace capacity restrictions. For the future, the government will secure an environment where safe and efficient operation can be achieved by reducing control intervals utilizing the MTSAT and increasing the airspace acceptance capacity.

(b) Domestic air routes

While developing the RNAV routes nationwide, the government will carry out a reorganization of the air routes (sky highway project), which separates the altitudes of the RNAV routes and existing routes operationally, in order to avoid heavy traffic caused by establishing these RNAV routes in addition to existing flight routes (routes that link between ground navigation aids such as VOR/DME in straight lines).

(c) Airspace around airports

The government will work to expand the RNAV routes by introducing the departure routes, arrival routes and approach techniques that respond to satellite RNAV (GNSS.)

Particularly, traffic congestion in the airspace of Kanto area including Tokyo International Airport and Narita International Airport is becoming pronounced, and the volume of traffic is expected to increase further. Therefore, the government will carry out a reorganization of the Kanto airspace by introducing RNAV and new systems with the re-expansion project of Haneda Airport. This reorganization is expected to enable an increase of airspace capacity, improvement of operational efficiency, environmental measures and reduction of the workload of controllers and pilots by effectively utilizing the limited airspace of Kanto area.

b. Using airspace effectively

(a) Basic approach

The government will take required measures according to the following concepts to implement the efficient operation of the airspace.

- i) Introducing and implementing new operational concepts which enable air transport companies to choose and fly routes and altitudes with far less restrictions, and variable routes and variable airspace based on the principle of ASM.
- ii) Strengthening cooperation with airspace managing agencies in other countries and the American forces to use airspace effectively.

iii) Advancing developments of information processing systems to enable the above.

(b) Utilizing the function of ATM centers

While grasping and managing the air traffic conditions throughout the country in an integrated manner at the ATM centers, the government will strive for the safe and efficient use of airspace, in cooperation with relevant administrative agencies and air transport companies, by implementing adjustments for private airplanes to fly in training airspace unused by the Self Defense Force, as well as adjustments with airliners to reduce flight delays.

(3) Improving airports

a. Improving major airports in large cities

To cope with the increasing demand for domestic and international air services, the government will promote improvements to major airports in large cities as a high-priority task. In addition, they will promote necessary improvements to general airports, through measures such as upgrading existing facilities.

In order to ensure passenger safety, the government will work to make air passenger terminal facilities "barrier-free," by eliminating steps and by designing them to ensure safe use by the elderly and disabled people, and promote universal-designs from the viewpoint of achieving comprehensive and general environmental improvements.

b. Improving airport safety technology

To ensure air traffic safety, it is very important that facilities such as runways are constructed strictly in accordance with designated standards. In addition, facilities must be maintained and managed to ensure that they are in perfect operating condition at all times. In view of this, the government will improve airport safety technology that directly influences air traffic safety. This includes measures to ensure air traffic safety when construction work is in progress at airports, upgrading of airport signaling facilities, checking for tarmac deterioration, maintenance to prevent destruction of vital facilities, and measures to quickly remove and melt away snow at airports where it snows.

Furthermore, the government will promote investigations and studies aimed at actively introducing new airport safety technology.

(4) Enhancing the disaster measures of airports and aviation safety facilities

Even in the South Hyogo prefecture earthquake and the Mid Niigata prefecture earthquake, airport and aviation safety facilities suffered only very minor damage. As a result, the facilities were able to provide emergency transport and alternative transport for disrupted railway and road services, as well as to serve as bases for restoration activities. In this way, airports are required to maintain their functions even in times of disasters. Therefore, the government will work to strengthen measures against disasters for airports and aviation safety facilities.

a. Examining how to construct disaster-resistant airports

The government will examine how to build disaster-resistant airports tailored to the needs while taking into account the roles of airports in regions, and improve the disaster-prevention performance of airports so that their functions can be maintained in times of disaster. To achieve these objectives, the government will study the measures for existing airports including liquefaction countermeasures and earthquake-resistance measures.

b. Improving the earthquake-resistance of airport facilities

There is a possibility that some of the existing facilities such as airport runways, taxiways and control towers do not satisfy current earthquake-resistance requirements, either because they were constructed according to old design standards, or because they have become too old and deteriorated. The government will work to improve the earthquake-resistance of airport facilities by implementing appropriate diagnosis and instituting foundation liquefaction countermeasures based on the diagnosis for these facilities.

c. Strengthening ongoing provision of aviation safety services

To secure emergency transport and alternative transport at the time of disasters, the government will strengthen the backup function of aviation safety facilities and area control centers at airports where necessary, while continually providing aviation safety services in times of disaster.

2. Securing aircraft operational safety

The government will promote safety measures such as establishment of a new fulltime auditing section and promotion of a shift from ex-post measures to preventive safety administration. In addition, the government will encourage transportation operators to establish a safety management system that involves every level of operators, from the top management to the operational sector, and introduce a “safety management assessment scheme” in which the government will assess such a system, to secure aircraft operational safety.

(1) Strengthening supervision system for air transport companies

In view of the increasingly complex and diverse corporate structure of air transportation companies, the government will strengthen the on-site inspection system drastically, and implement systematic audits by grasping the status of safety and future risks of airliners. Also to achieve professional and accurate audits, the government will improve training for officials in charge of audits.

(2) Shifting emphasis to preventive safety administration

In order to prevent the occurrence of accidents and serious problems, the government will promote preventive safety administration to give instructions on safety measures to airliners and to review safety standards by collecting and continually analyzing information on accidents, incidents, mechanical problems and other aviation safety issues. In addition, to prevent human errors, the government will examine the method of training aviation workers and also introduce a certification system for proficiency of aviation English to improve the communication skills of pilots.

(3) Improving the skills of aviation workers

Due to the growing demand for air services, the demand for airline pilots in air transport services is expected to increase in the long run. For this reason, the government will promote training of core pilots for air carriers at the Civil Aviation College to ensure a stable supply of pilots. At the same time, in order to maintain a high quality of pilots, the government will provide sufficient guidance to air transport companies on their in-house training for pilots.

The physical and mental health of aircraft crews is another vital factor to ensure air traffic safety. This is why only doctors and medical institutions designated by the Minister of Land, Infrastructure and Transport are authorized to conduct health examinations of aircraft crew. The government will instruct these doctors and medical institutions through seminars to apply evaluation criteria of examinations uniformly, while requiring air transport companies to perform suitable daily health controls of their aircraft crews. The government will also thoroughly disseminate safety-related information to air transport companies and instruct them to promote safety awareness.

(4) Improving education for aviation safety officers

The government will relocate and improve the Aeronautical Safety College, which has suffered from aging facilities and limited space, to enhance training of aviation safety officers in the future. At the same time, to keep pace with the introduction and development of the aeronautical satellite-based New Air Navigation System, the government will review training courses and curriculums for these officers and improve training facilities for them. Furthermore, the government will improve training systems to adapt to changes in the aviation environment, such as globalization and economic and social shifts.

(5) Securing the safety of foreign aircraft

For the purpose of securing the safety of foreign aircrafts entering Japan, the government is implementing on-site inspections on foreign aircrafts (ramp inspections) based on the Convention on International Civil Aviation and the Civil Aeronautics Act (Act No. 231 of 1952), and will expand the ramp inspections to include all air service operating countries and all carriers that come into Japan.

(6) Improving guidance on accident prevention of small aircraft

To prevent accidents involving small aircraft, the government will strengthen guidance on observation of all laws and relevant regulations, comprehensive education and training of small aircraft operators, and accurate understanding of meteorological conditions. The government will also advise parties involved in the increasingly popular pursuit of aerial recreations to prevent accidents, by working through relevant groups and organizations. Furthermore, for rescue planes in the event of a natural disaster, the government will work to improve measures to ensure their safe operation in congested airspaces.

(7) Promoting safety measures on aerial leisure

It is expected that the number of people participating in aerial leisure activities such as flying ultra light planes, paragliding, skydiving, flying gliders, and hot-air ballooning, will continue to increase in the years ahead. In view of this, the government will improve safety education through relevant organizations such as the Japan Aeronautic Association, and other related sports organizations.

(8) Improving safety standards for transportation of hazardous materials

As a result of developments in medical technology, the volume of radioactive materials being transported by air is increasing. The quantity of hazardous materials being transported by air is also increasing, and these materials are becoming more and more diverse, as developments in chemical engineering give rise to new hazardous materials. To deal with this issue, the ICAO and the International Atomic Energy Agency (IAEA) are improving safety standards relating to the transport of hazardous materials. In accordance with these international trends, the government will revise relevant standards as necessary.

In addition, the government will advise air transport companies on providing comprehensive education and training to workers involved in transporting hazardous materials.

(9) Improving aviation accident investigations

In order to contribute to prevention of aviation accidents by performing prompt and appropriate investigations into the causes of accidents and serious incidents, the government will try to enhance the quality of investigators by improving the training of investigators and actively exchanging information with overseas accident investigation bureaus, and also work to improve analysis ability by utilizing various investigation instruments.

(10) Improving meteorological information for air transport

The government will accurately understand any weather conditions or natural phenomena which could influence air transport safety, and make efforts to improve various qualities of aviation weather information, such as meteorological forecasts and warnings for airports, meteorological reports on airspaces, aviation forecast charts and volcanic ash advisories, and to ensure appropriate timely announcements and prompt conveyance of such information. Furthermore, facilities for observing weather conditions and volcanic activities will be constructed as necessary, and maintenance and improvement of those facilities will be promoted.

3. Ensuring aircraft safety

The government will work to improve aircraft safety by promoting safety measures aimed at improving technical standards, information collection and processing systems, and inspection systems.

(1) Improving technical standards for aircraft and equipment safety

To improve the safety of aircraft, the government will collect, analyze and provide information relating to the safety of Japanese aircraft, as well as safety assurance-related information obtained from foreign

governments and foreign manufacturers. At the same time, the government will draw up improved safety standards to keep pace with technological advances, and investigate technology that can be used to improve safety.

(2) Collecting information on aircraft safety and improvement of processing systems

To deal with the increasing volume of air traffic, the government will promote measures to prevent failures in equipment and materials by improving the system to collect and process information relating to the safety of aircraft.

Information relating to aircraft safety is released to the public along with information on operation safety. The government will examine the use of diverse media and improvement of the infrastructure for publicizing information relating to aircraft safety.

(3) Improving aircraft inspection systems

The government will improve inspections of aircraft designs in type certification procedures for both domestically produced and imported aircraft. They will then improve aircraft inspection systems by guiding and supervising the private companies that check for conformity to standards on behalf of the national government.

In addition, the government will try to improve the quality of inspections by improving training for airworthiness engineers.

(4) Improving aircraft maintenance examination systems

To respond to the new entry of air transport companies and the diversification of the maintenance systems by contracting maintenance services, the government will improve their examination, guidance and supervision system for aircraft maintenance.

In addition, the government will try to enhance the quality of examinations by improving training for aircarrier airworthiness engineers.

(5) Improving measures for aging aircraft

The government will promote measures to deal with aging aircrafts, in view of problem cases with aircraft manufacturers and operators, and policy trends in other countries.

4. Enhancing rescue and emergency services systems

To deal promptly and effectively with air distress incidents and other aircraft accidents, the government will improve rescue and emergency services systems by promoting closer cooperation between relevant organizations.

(1) Improving search and rescue systems

To launch prompt and effective search and rescue operations when aircrafts are in distress or missing, the Rescue Co-ordination Center, a council formed by relevant administrative bodies, will work to im-

prove activity planning, training, and information collection and processing systems, to deal efficiently with a wide variety of emergency situations. At the same time, it will improve liaison and cooperation by improving the performance of facilities.

(2) Improving fire-fighting and emergency medical systems

The government will work to improve fire-fighting systems at Class 1 (Narita International Airport, Chubu International Airport, Kansai International Airport and airports required for international routes) and Class 2 airports (airports required for major domestic routes) managed by the national government, in accordance with relevant international standards, through measures such as providing for chemical fire engines as needed. The government will also instruct the airport managers of the Narita International Airport, Chubu International Airport, Kansai International Airport and Class 2 and Class 3 airports (airports required for securing local air transport) managed by municipalities, to improve fire-fighting facilities by adopting necessary measures, as mentioned above.

Also, to improve emergency medical systems at airports, the government will proceed to provide appropriate medical equipment and materials according to annual plans. At the same time, they will improve cooperation with relevant medical institutions so that emergency medical activities can be conducted smoothly and effectively.

Furthermore, to provide adequate fire-fighting and emergency systems in municipalities close to airports, the government will instruct the relevant fire-fighting bodies to improve their facilities and take necessary measures. Also, to ensure that first aid treatment can be promptly delivered when needed, the government will encourage airport officers to attend first aid treatment seminars.

5. Promoting victim support

The government will strengthen support activities for victims who claim damages, and promote measures that take into account the feelings of the victims. Especially when a large-scale accident occurs, the police, hospitals, local authorities and private victims support organizations will work together to support victims.

6. Enhancing R&D and study activities

The government will secure air traffic safety by promoting R&D on air traffic safety and study for clarifying the causes of air traffic accidents, and reflect their findings on safety measures promptly.

(1) Promoting research and development into air transport safety

The government will encourage independent administrative organizations and other testing and research institutes to conduct research and studies into; 1. Assessment of the capacity expansion and safety of airspace and air routes, 2. Capacity expansion of congested airports, 3. Improvement of safety and efficiency by preventive safety technology and new technologies, 4. The Satellite-based Augmentation System, 5. Air transport management methods to achieve more efficient use of airspace, 6. Civil engineering facilities of airports, such as runways for safer take-offs and landings, 7. Technology for improving passenger cabin

safety by providing better protection in the event of an accident, and 8. Technology for detecting air turbulence and other abnormal conditions from aircraft. In addition, the government will promote comprehensive research and development efforts through closer liaison and cooperation between relevant testing and research institutions.

(2) Promoting comprehensive investigations into the causes of aviation accidents

To promptly and effectively determining the causes of aviation accidents and serious incidents, the government will 1. Improve flight record analysis technology, 2. Improve analysis technology using simulators, 3. Improve the aviation material analysis technology, and 4. Promote comprehensive study through the improvement of the accident report database, and reflect the findings on clarifying the causes.