

**57th CONFERENCE OF
DIRECTORS GENERAL OF CIVIL AVIATION
ASIA AND PACIFIC REGIONS**

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AGENDA ITEM 3 : AVIATION SAFETY

**INFORMATION SHARING
ON THE RISK-BASED SAFETY SURVEILLANCE SYSTEM
OF THE REPUBLIC OF KOREA**

Presented by the Republic of Korea

INFORMATION PAPER

SUMMARY

Safety risk-based surveillance (SRBS) enables prioritization and allocation of State's safety management resources commensurate with the safety risk profiles based on reliable and meaningful safety databases. The Republic of Korea has established and is operating an DB platform to support the collection and analysis of safety data and information for airlines, creation of risk profiles, and effective implementations of SRBS.

INFORMATION SHARING ON THE RISK BASED SAFETY SURVEILLANCE SYSTEM OF THE REPUBLIC OF KOREA

1. INTRODUCTION

1.1 Among the eight Critical Elements constituting the national safety surveillance system stated in ICAO Annex 19, Certification (CE 6), Surveillance (CE 7), and Resolution of Safety Concerns (CE 8) are key elements of the aviation safety management function. This is also related to the Safety Risk Management and Safety Assurance functions in connection with the National Aviation Safety Program (SSP).

1.2 Risk-based safety surveillance starts with the creation of a risk profile to focus on high risk factors and make decisions based on data (D3M). An effective data collection/analysis program is required for safety data collection and analysis for risk profile creation and for safety performance measurement. As a part of the Safety Data Collection and Processing System (SDCPS), the Republic of Korea (ROK) has established and operated a risk-based safety surveillance network--Korea Risk based Oversight Network (K-RION)--since 2020, which has been continuously upgraded to date.

2. KOREA RISK BASED OVERSIGHT NETWORK(K-RION) SYSTEM

2.1 The main functions of K-RION are as follows:

Data Gathering

2.2 A state collects and updates a total of 65 types of safety data and safety information related to aircraft operations by airlines through K-RION. Each data is divided depending on the sources, such as web-based data automatically collected, data submitted by airlines, and data directly generated by the government aviation safety inspectors.

- a) Automatic collection: Number of flights by airline, route status, registered aircraft, ages by aircraft, financial reports (connect with other data systems)
- b) Airlines' submission: Aviation safety mandatory report, service difficulty reports, number of employees
- c) Government-generated: Safety inspection findings, flight qualification tests, investigation reports, government-issued special approvals, significant changes in airlines (for example, restructuring), changes in labor-management relations, temporary regularity alleviations

2.3 The safety officers of the authorities identify the risk factors for each safety data collected in K-RION, conduct a risk assessment according to the risk analysis matrix, and enter the data it into the system. Hazard list and risk register are created according to risk levels.

Data Analysis and Organizational safety risk Profile

2.4 A State composes a risk profile for each airline by synthesizing data collection through K-RION and performs safety surveillance and safety management according to risk priority. A total score of each airline is calculated monthly by selecting ten types out of a total of 65 types of basic safety data and assigning weights. The total score does not mean a direct level of safety, but rather indicates the priority of surveillance on how urgently safety surveillance is required for the airline concerned.

2.5 For airlines or sectors with low ratings, safety surveillance will be strengthened when establishing a monthly inspection plan for the next month, such as increasing the number of inspections, extending the inspection period, and assigning additional supervisors. K-RION considers the risk factors of the airline concerned and is equipped with a function that automatically recommends the most suitable inspection items and checklists at the present time. Comprehensive ratings and recommendation checklists for each airline are automatically updated on a monthly basis based on the collected data.

Table. Factors and weights to consider when establishing risk-based aviation safety surveillance plan

Annual surveillance plan reflection factors (data)	Weights	Monthly surveillance plan reflection factors (data)	Weights
1. Indicator/goal achievement	25	1. Indicator/goal achievement	65
2. Safety surveillance points	25	2. Aircraft accident/incident	10
3. Aircraft accident/incident	10	3. Flight qualification test results	7
4. Violation of regulations (administrative disposition)	8	4. Aviation safety issues	4
5. Flight qualification test results	7	5. Failure and defects	3
6. Aviation safety issues	5	6. Overseas governments' feedback	1
7. Failure and defects	3	7. Major changes - Changes in financial status, organizational restructuring, and labor-management relations - Changes in flight mode, expansion of routes - Introduction/transmission of aircraft and major facilities - Temporary standard relaxation application	10
8. Dangerous goods safety event	1		
9. Overseas governments' feedback	1		
10. Size and complexity by airline - Financial soundness, number of flights, route structure - Aircraft type/number, manpower size	15		

Safety Performance Monitoring

2.6 Each State should periodically monitor safety performance based on safety performance objectives and safety performance indicators. K-RION provides very useful functions for safety and monitoring. It shows the degree of achievements of the target values for each safety performance indicator and whether the alarm value is exceeded. The safety trend by indicator, airline, model, and field can be displayed in a visualized form such as tables, charts, and graphs.

2.7 Not only government aviation safety inspectors, but also airlines can access the system to check the safety and monitoring results of the airline in real time. It is very easy to understand the relative safety performance, as it is a function to compare with the national average safety trends. Moreover, it provides a function to share key safety information with airlines, such as national risk factors and risk registration saved in K-RION. In this way, airlines can use the data for their own Safety Management System (SMS).

Decision making: risk based surveillance

2.8 Based on the risk profile analyzed through K-RION, the government and airlines hold regular risk panel meetings and discuss and implements mitigation measures for identified hazards.

2.9 Based on the risk profile, risk-based aviation safety surveillance is continuously being performed. Based on objective data, effective safety management has become possible by concentrating supervisory resources and policy support in high-risk areas. As a result, the incident rate of national airlines of the ROK has been greatly reduced every year from 2020 to 2022, posting a good effect.

3. AWAY FORWARD

3.1 K-RION is a comprehensive aviation safety management platform that operates a series of safety activities, such as collection/processing/utilization/sharing of aviation safety data and safety information. It provides useful safety management functions for both the government and airlines. The ROK plans to develop additional data collection and analysis functions this year so that safety surveillance of foreign airlines flying from and to Korea can be conducted based on risk. The ROK plans to actively cooperate in providing and sharing information so that the data can be used for data collection/sharing programs in the Asia-Pacific region. The ROK is willing to share operational experiences and cases of establishing a risk-based safety management system and implementing risk-based safety surveillance (RBO) through the system and to provide system and technical support.

4. ACTION BY THE CONFERENCE

4.1 The Conference is invited to:

- a) Take note of the information contained in this Paper and encourage Member States to conduct risk-based safety surveillance activities; and
- b) Encourage Member States to share the experiences and know-how in risk-based safety surveillance and IT systems.

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