

4. Utilization of information stored in FDM by operators for safe operations

The advantages of utilizing objective information obtained from FDM for operators include the improvement and preservation of skills of pilots and efficient risk management in daily operations by reviewing such information. The information obtained can be utilized in the following ways.

(1) Improvement and preservation of skills of pilots

It is feasible to effectively identify the operational procedures of each pilot in accordance with operational form and any unaware habit by reviewing data after flight, comparing trajectory records with past trajectory records of pilots and standard flight routes and by playing cockpit video. Furthermore, advice from flight instructors helps individual pilots improve their skills, thereby increasing flight safety and preventing accidents.

The utilization of analysis tools that visualize data in that process brings about a benefit that pilots can have better understanding of their own flight style as well as other benefits, because movements of aircraft can be checked visually from an outside perspective.



Playback cockpit image



Visualization of flight data

(2) Monitoring of operations

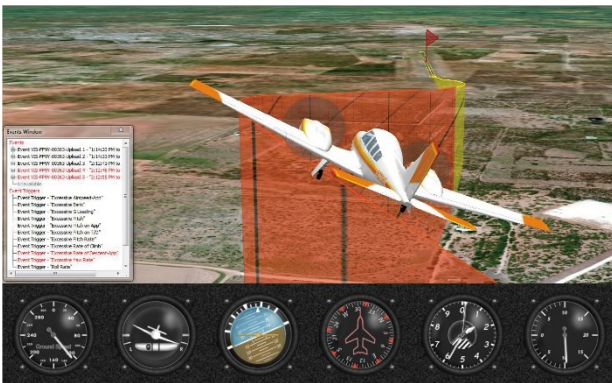
Air transport operator should manage its operations of aircraft under the flight dispatcher. Air carrier that operates large aeroplanes manages from the preparations for departure to the reporting of operation status after arrival. If any failure is found, information is shared among parties concerned to ensure safety. On the other hand, it is difficult for individual air transport and flight operators to ensure such a system and identify the status of each flight.

It is difficult to identify any deviation from standard procedures in such a system or pilots themselves may not be aware of risky flight. In such a case, data from FDM can help instructors give a pilot advice based on the results of check and verification of the status of each flight.

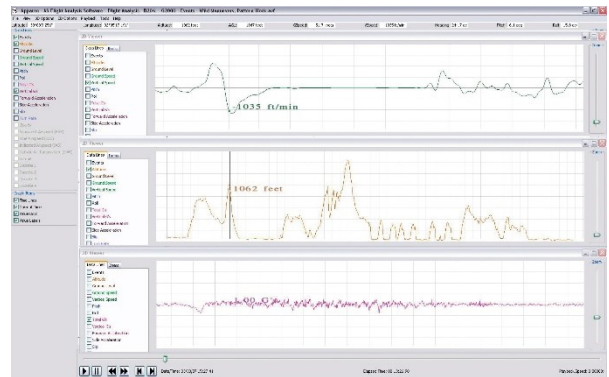
This data can also be utilized by an aviation operator to investigate the cause of near-miss incidents and to formulate appropriate preventive measures more promptly. Furthermore, it becomes feasible to eradicate any indication of future accidents by extracting risk factors such as near-miss incidents in daily

operations using analytical tools as well as to efficiently bring out the safety management function by incorporating it to safety management system (SMS) of aviation operators.

In daily risk management, it is important to improve flight safety by addressing each individual flight risk in a non-punished environment without accusing the responsibility of a pilot. FDM is very useful in this sense, since it can obtain and analyze objective information.



Application of analytical tool (display of flight route)



Analytical function of various data

(3) Monitoring of aircraft failure

It is feasible to identify the status of aircraft based on various recorded data and utilize it for the prevention of failure.

5. Importance of objective information in terms of accident investigations

When an aircraft accident occurs, accident investigators are sent to an accident site to collect information necessary to investigate its causes. In this process, the discovery of flight recorders (also called “black box”) draws the attention of the press in the case of a large aeroplane, but small aircraft are rarely equipped with this type of equipment. If small aircraft are equipped with FDM explained in Chapter 3, more than 10 parameters can be obtained from internal sensor, etc. and very useful information becomes available to investigate the causes, although the number of parameters is fewer than flight recorders. Moreover, if cockpit images which are usually not contained in flight recorders are recorded, it is very useful to investigate the accident, because the control of devices and external information can be obtained.

The next section presents the sources of data used in accident investigation reports by JTSC to consider how objective information obtained from FDM can be utilized to improve safety.