Executive Summary

On June 6, 2009, Japan Airlines (JAL) flight JL 653, a Boeing 767-300ER, Japanese registration JA613J, took off from Osaka Airport, Japan for Taoyuan International Airport with 2 flight crew, 9 cabin crew, and 33 passengers on board.

As the aircraft reached 1,900 ft. during its approach into Taoyuan at 2020:43 hrs, one of the cabin crew detected one passenger seat began to burn with apparent smoke, when he/she smelled a burning smell from rear cabin. At 2021:18 hrs, the purser reported the smoke scenario to the flight crew, and began to direct passengers to the other side of the cabin. The flight crew decided to continue the approach after discussion. At 2021:38 hrs, L2 cabin crew instructed R2 cabin crew to put out the fire with an extinguisher. At 2021:53 hrs when the aircraft descended over 1,500ft., the flight crew informed Taoyuan tower about the cabin smoke, and also informed that the aircraft would stop on taxiway after landing. At 2022:00 hrs cabin crew announced to passengers that firefighting had begun. At 2022:41 hrs, all cabin crew were informed to be seated for landing. At 2022:59 hrs, the flight crew declared emergency to Taoyuan tower. At 2023:10 hrs, the flight crew were informed by the tower that the fire engines were on their way to standby. The aircraft landed safely at 2024:16 hrs. Upon inspection, a charred lighter was found in close proximity to the seat that the fire was set to start.

According to Article 6 of the Republic of China (ROC) Aviation Occurrence Investigation Act, and the content of Annex 13 to the Convention on International Civil Aviation, the Aviation Safety Council (ASC), an independent aviation occurrence investigation agency, was responsible for conducting the investigation. The investigation team also included members from JTSB (Japan Transport Safety Board, Japan), NTSB (National Transportation Safety Board, USA), CAA Taiwan, and JAL.

The 'Draft Final Report'[1] of the occurrence investigation was completed in July 2010. In accordance with the procedures, it was reviewed at ASC's Council Meeting on August 4th, 2010 and then sent to relevant organizations and authorities for comments on August 20th, 2010. After comments were collected and integrated, the investigation report was reviewed and approved by ASC's 139th Council Meeting on November 30th, 2010, and published to public on December 31st, 2010.

[1] 本會現今格式之英文摘要報告已無提及事實資料報告相關時程，故省略之。

There are a total of 14 findings from the final report, and 8 safety recommendations issued to the related organizations.

Findings as the result of this investigation

The ASC presents the findings derived from the factual information gathered during the investigation and the analysis of the occurrence. The findings are presented in three categories: **findings related to probable causes**, **findings related to risk**, and **other findings**.

The **findings related to probable causes** identify elements that have been shown to have operated in the occurrence, or almost certainly operated in the occurrence. These findings are associated with unsafe acts, unsafe conditions, or safety deficiencies associated with safety significant events that played a major role in the circumstances leading to the occurrence.

The **findings related to risk** identify elements of risk that have the potential to degrade aviation safety. Some of the findings in this category identify unsafe acts, unsafe conditions, and safety deficiencies, including organizational and systemic risks that made this occurrence more likely; however, they cannot be clearly shown to have operated in the occurrence alone. Furthermore, some of the findings in this category identify risks that are unlikely to be related to the occurrence but, nonetheless, were safety deficiencies that may warrant future safety actions.

Other findings identify elements that have the potential to enhance aviation safety, resolve a controversial issue, or clarify an ambiguity point which remains to be resolved. Some of these findings are of general interests that are often included in the ICAO format accident reports for informational, safety awareness, education, and improvement purposes.

Findings Related to Probable Causes

1. A blue flame (butane) lighter was left behind at seat 47C a gap around the pivot joint of the seatback and the seat pan. Before the flight began to descend, passenger sitting at seat 47C moved his/her seatback to the upright position, the lighter was lit as a result of the seatback movement, which incidentally generated a continuous compression on the ignition device of the lighter. The blue flame from the lighter after lit up broke out backward, and burned through the seat cloth. Part of the flame was blocked by the seat cloth, and directed back to the lighter, leading to its plastic wrapping partially melting and the remaining fuel (butane) was ignited all at once. The flame reached about 1.5 meters high but vanished quickly. No injury was reported. (2.7)

Findings Related to Risk

1. The lighter that caused the fire was in compliance with the regulation on personal items allowed to be carried on board. However the lighter may be ignited by activating its two operational components through one successive pressing. (2.2)

2. The fire did not spread thanks to small quantity of fuel remaining and no flammable was around. However the flame reached shoulder height at the moment of ignition, passenger might have been burned if the seat had occupied. (2.6)

Other Findings

1. Starting January 01, 2010, the Dangerous Goods Regulations (DGR) of International Air Transport Association (IATA) has banned blue flame lighters or lighters for cigar usage as on board personal items. International Civil Aviation Organization (ICAO) Dangerous Goods Panel (DGP) ad hoc team held a discussion on this issue in the meeting in October 2009. (2.2.1)

2. The existing airport security screening procedures did not include any individual check on each lighter carried on board, so it is difficult to identify whether it is a blue flame lighter or that for cigar usage. (2.2.3)

3. The geometry of blue flame lighter would make itself slip through the gap between seatback and seat pan, if falling out from a passenger's pocket as the passenger repeatedly adjusts the seatback angle. (2.3)

4. Relying on from cabin cleaning staffs or cabin crew to search beneath seatback cushions for lighters before flight is time and man power consuming, and it may have impact on normal aircraft operation. (2.4)

5. Have passengers checked their personal belongings before leaving aircraft while cabin crew reminded passengers not to leave their personal belongings behind would have lowered the chance of leaving any lighters on board. (2.4)

6. Existing routine maintenance check (A or C check) can find items left behind in the gap between seatback and seat pan. (2.4)

7. After the lighter fell into the gap between seatback and seat pan, it had to be stuck at certain orientation with seatback adjustment component, such that it is able to be ignited with compression from the component, stands fixed, and remains lit even the seatback is adjusted. (2.5)

8. The cabin crew moved the passenger from seat 47C had prevented him/her from being burned. (2.8.1)

9. Cabin crew's performance concerning alertness to cabin abnormal situation, moving passenger from seats when required, judgment of fire source, preliminary reporting, obtaining fire extinguishers, crew team work on firefighting, efficiently putting up the fire to avoid possible thick smoke in the cabin, was in compliance with the procedures stated in cabin crew safety manual. (2.8.1)

10. The reason why some cabin crew failed to inform the captain when leaving their seats during descent, and ask other crew members to keep reporting the firefighting status so they could be informed was because they did inform purser before leaving their seats, and prioritized firefighting as a flexible arrangement due to immediate touch down. (2.8.1)

11. Purser's continuous reporting cabin situation to cockpit, at the same time she made an announcement in Japanese and English to keep passengers and other crew members informed about the fire, the undergoing firefighting, and ask passengers to remain calm was in compliance to relevant procedures. However purser did not report to captain immediately after the fire was extinguished. (2.8.2)

Interim Flight Safety Bulletin

At the early stage of the investigation, ASC released 'Interim Flight Safety Bulletin' on June 23rd, 2009, Reference No. ASC-IFSB-09-06-001, and recommends the following:

1. Request airline operators to have one-time special inspection on the gap area between seatback and seat pan, and review the procedures of cabin cleaning.

2. Request civil aviation authority to review relevant regulations regarding passengers carrying lighters.

Safety Recommendations

To Japan Airlines

1. Request cabin crew to improve on those items, as indicated in this report, which were not followed as per Japan Airlines' 'General Provision on Cabin Fire Fighting' and include them into annual recurrent training. (ASC-ASR-10-12-001)

To Civil Aeronautics Administration

1. Follow-up the progress on ICAO's amendment to the regulations concerning ban on blue flame lighters or lighters for cigar usage to be carried on board.

Before the amendment takes effect, study an interim solution to avoid this type of lighter left on board to cause potential danger. (ASC-ASR-10-12-002)

2. Before the ICAO amendment takes effect, consider amend limitations to lighters to be carried on board as personal items, for example: require successively activating at least two components in order to ignite. (ASC-ASR-10-12-003)

To Civil Aviation Bureau, MLIT, Japan

1. Follow-up the progress on ICAO's amendment to the regulations concerning ban on blue flame lighters or lighters for cigar usage to be carried on board. Before the amendment takes effect, study an interim solution to avoid this type of lighter left on board to cause potential danger. (ASC-ASR-10-12-004)

2. Supervise Japan Airlines to implement ASC's recommendation on cabin crew accordingly. (ASC-ASR-10-12-05)

3. Request ICAO to consider amend limitations to lighters to be carried on board as personal items, for example: require successively activating at least two components in order to ignite. (ASC-ASR-10-12-06).