

JFAS Aviation Safety News

航空安全推進連絡会議

Japan Federation of Civil Aviationworkers'
Union for Air Safety

Date 2026.1.12 ASN60-03

〒144-0043

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jfas-sky.jp

Erroneous Takeoff from HND/RJTT RWY05

Introduction

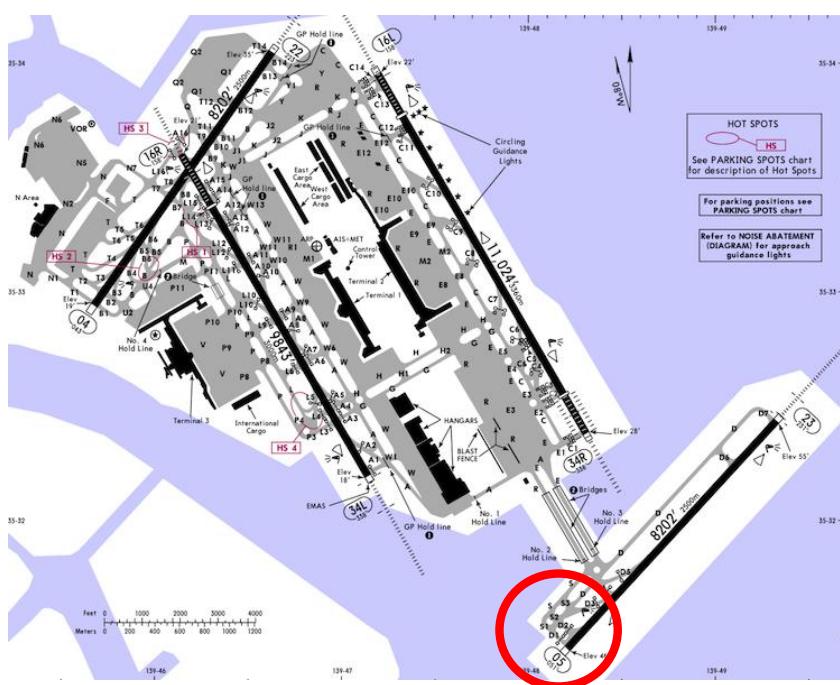
The incident involving an aircraft damaging runway lights during takeoff from Haneda Airport's RWY05 in October 2025 had a significant impact on many aviation stakeholders. This resulted from a failure to fulfill the fundamental principle of aviation safety: identifying the cause and implementing measures to prevent recurrence. This was because the exact same incident had occurred at the very same location just six months earlier, in April of the same year.

In the case of accidents or similar incidents, the investigating agency (the Transportation Safety Board) conducts a cause investigation and implements measures to prevent recurrence after the event occurs. However, because the Japan Civil Aviation Bureau (JCAB) classified the first occurrence as an "irregular operation," no cause investigation was conducted. Furthermore, within JAL, which experienced the incident, awareness was raised among pilots by sharing the case as an example, but there was no information sharing with other airlines.

Thus, in October, just as that incident was about to be forgotten as a mere coincidence, the same phenomenon occurred again. Not only that, but the damage to the aircraft was more severe than before. This made aviation officials realize that investigating the cause of that incident and implementing measures to prevent recurrence were absolutely essential. However, the JCAB once again classified this second occurrence as an "irregular operation," and thus the opportunity to investigate the cause was lost once more.

Since the dawn of aviation, aircraft operations have enhanced safety by investigating the causes of various accidents and incidents and implementing measures to prevent recurrence. This "learning from failure" approach

has been discussed and systematized by various aviation organizations, including the ICAO (International Civil Aviation Organization). These efforts have led to aircraft being recognized as a safe mode of transportation, yet accidents have not been eliminated entirely. The aircraft collision at Haneda Airport on January 2, 2024, is likely still fresh in everyone's memory. Yet, every day, somewhere in the world, minor aircraft-related occurrences, incidents, and accidents continue to happen.



<Figure 1: Haneda Airport Layout and RWY 05 where the erroneous takeoffs occurred>

Amidst this situation, the two consecutive incidents that occurred at Haneda Airport represent an extremely unusual occurrence involving the successive damage of aviation lights. Unless the cause is thoroughly investigated and appropriate measures to prevent recurrence are implemented, there is no doubt that the likelihood of such incidents recurring again is extremely high.

Therefore, we, Japan Federation for Air Safety (JFAS), have decided to independently investigate the causes and propose countermeasures to prevent recurrence. Please understand that the content presented here is not a multi-faceted approach as might be found in a formal report issued by an investigative body, but rather improvement proposals primarily concerning facilities, viewed from the perspective of pilots.

Fact-Finding upon Occurrence of Erroneous Takeoffs

- Aircraft taking off from RWY05 will taxi from TWY D1 or D2, with the specific taxiway assigned by ATC.
- Both aircraft that damaged Runway Lights (RL) while initiating takeoff roll had entered the RWY from RWY D2, suggesting that factors potentially leading to pilot misperception may exist when entering the RWY from TWY D2.
- From MAR 2025, runway renovation work was being carried out in the area approximately 30 meters from the runway centerline within the range from D1 to D5 on RWY05. Consequently, the Runway Centerline Lights (RCLL) in that area were not illuminated.
- Due to construction near the runway centerline, only the five taxi centerline lights (TCLL) extending from TWY D2 to the runway centerline after entering the runway from TWY D2 were illuminated, while the subsequent TCLL on the runway centerline side were extinguished (blue circle area in Photo 1).
- Regarding the TCLL in question, while a NOTAM (Notice to Air Missions) did provide information stating “Partial lighting failure on TCLL at TWY D2,” it has been determined that the details and methods for disseminating this information were inadequate.
- There are two taxiway centerline markings applied from TWY D2 to RWY05. The northeast marking is for high-speed exits by aircraft landing on RWY23. The runway holding position markings also include the runway number “23-05” painted on the pavement for the northeast marking.
- During daylight time, pilots can also see the northeast marking, allowing them to approach the runway along that marking.
- Meanwhile, the TCLL installed parallel to the northeast side marking is designed for high-speed exit, with its illumination direction restricted to prevent pilots entering RWY05 from TWY D2 during takeoff from seeing the lights (note that this TCLL was also unlit at the time).



<Photo1: The 5 TWCLs and the 3 RLs that were lit>

- Therefore, the only runway lights visible to pilots of aircraft approaching RWY05 from TWY D2 were the five lit TCLL installed parallel to the southwest marking.
- The pilot approaches the runway along the five lit TCLL. Beyond the fifth light, an embedded RL becomes visible on the left side of the flight path (purple circle in Photo 1). RL are critically important aviation lights that indicate the runway threshold to pilots at night or in low visibility. They are therefore also installed (embedded) at regular intervals on the taxiways.
- RL has directional lighting that particularly brightens the direction most visible to pilots of departing and arriving aircraft. Therefore, as you taxi from the taxiway toward the runway centerline, the distinctiveness of the RL gradually becomes more pronounced.
- The pilot proceeding along the southwest side marking observed that when taxiing along the five lit TCLL, the embedded RL was clearly visible on the left side of the direction of travel. Furthermore, after the fifth TCLL light, the remaining lights were out. Consequently, the RL and the fifth TCLL light appeared aligned in a straight line relative to RWY05. This created a situation where the RL could be mistaken for the (unlit) RCLL.

Methods for Checking the Surrounding Environment and Your Own Aircraft

- Typically, the presence of terminal buildings, apron lights, and city lights around the runway allows pilots to faintly discern the surrounding environment even at night. However, Runway D (RWY05-23) is surrounded by sea, resulting in a complete absence of indirect lighting. This makes it significantly darker than other runways. Consequently, even if runway edge markings are painted on the pavement outside the runway, visualizing them at night is extremely difficult, and the surrounding environment cannot be seen. The only reliable references are the lights and markings directly ahead.
- In TCLL unlit environments, the taxiway centerline markings become the sole visual reference. During such nighttime taxiing, pilots must employ techniques to ensure visibility of these markings, such as activating additional lights used for takeoff and landing.
- In environments where the RWY width is 60 meters at night, aircraft such as the B737, A320, and Embraer class have cockpits positioned close to the runway surface. This characteristic makes it difficult for pilots to see the RL unless they consciously focus on them.
- When the RCLL is not illuminated, there is little visual information available. To confirm your aircraft is centered over the runway, you must carefully observe the runway centerline marking and widen your field of view to ensure both the RLs are visible on either side.

Presumed Cause

- The NOTAM checked at pre-flight briefing contained inaccurate information regarding the RCLL being out and partial outage of the TCLL, and there were deficiencies in the method of providing this information. For these reasons, it is possible that the pilot did not correctly recognize the status of the aeronautical lights being on or out.
- It is presumed that the pilot did not attempt to visually confirm the taxiway centerline markings and instead relied solely on the partially illuminated TCLL for taxiing.
- The pilot approaching the RWY from TWY D2 along the five lit TCLL likely shifted their gaze to the RL without seeing the taxiway centerline marking. This occurred because the illuminated fifth lit TCLL and the

RL embedded in the taxiway on the left appeared perfectly aligned with the runway direction of RWY05. Consequently, the pilot mistakenly identified that RL as the RCLL.

Note: This estimated cause was derived from the perspective of our organization's pilots in developing recurrence prevention measures and is not official.

Proposed Countermeasures to Prevent Recurrence by the Federation

As explained in the previous section, RWY05 is surrounded by the sea, resulting in an even more restricted field of view for pilots compared to other runways. Therefore, the most critical perspective is “how to ensure effective visibility of markings and lights on the taxiway.” Based on this, countermeasures are outlined below.

- The illumination direction of the 3 lit RLs lights embedded in the taxiway will be further restricted to minimize visibility to pilots taxiing from TWY D2 to RWY05 (adjusting the lights so they become visible only when the pilot is directly alongside the RL).
 - RL is an extremely important aeronautical light that affects minimum weather conditions for takeoff and landing. Therefore, it must be maintained in a condition where it is reliably visible to pilots of departing and arriving aircraft. However, it is known that the 3 RLs shown in <Photo 1> have a high potential to provide misleading information to pilots of aircraft entering RWY05 from TWY D2. Therefore, measures will be implemented to ensure pilots entering from D2 cannot see the RLs until they are nearly directly alongside them. The specific methods will be determined through technical discussions with aviation lighting specialists (e.g., the Aviation Bureau's Aviation Lighting and Electrical Engineering Office).
- We suggest to increase the number of TCLLs set to unlit to match the unlit RCLLs by approximately two lights compared to the current configuration, and reduce the number of partially lit TCLLs from five to approximately three.
 - It was found that when the number of partially lit TCLLs is 5, the arrangement makes the 5th TCLL and the RL appear aligned. Therefore, reducing the number of partially lit TCLLs forces pilots to rely on the runway centerline markings, encouraging their gaze to shift from the lights to the taxiway markings (if similar considerations are made at other airports, appropriate risk assessments must be conducted).
- We will strive to avoid simultaneous unlit TCLL and RCLL condition whenever possible.
 - It is unavoidable that RCLL will be unlit for a certain period due to runway construction or similar reasons. Therefore, during such periods, the presence of TCLL is critically important to inform pilots of the runway centerline location. Consequently, whenever RCLL is unlit, TCLL should be fully illuminated whenever possible.
 - It has been confirmed that partial TCLL outages, as in this case, can provide pilots with erroneous information. Therefore, when RCLL outages coincide with partial TCLL outages, a risk assessment must be conducted beforehand.
- NOTAM which indicates light outages was available, but it was not presented from the operator's (pilot's) perspective. The method of providing this information requires reconsideration.
- Additionally, consider removing the “23-05” surface paint located near the northeast taxiway centerline marking, which is positioned before the runway hold position marking (refer to Photo 2).
 - While there are two TCLLs extending from TWY D2 to RWY05, as stated previously, the northeast sign is for landing. Since the TCLL design does not allow pilots entering RWY05 from D2 to see the northeast sign at

night, the northeast sign is not for takeoff. Therefore, removal of the northeast surface paint “23-05” should be considered.



<Photo 2: Surface paint requiring consideration for removal>

Regarding Countermeasures Discussed by the HND RST

The JCAB have announced its direction to implement recurrence prevention measures within the HND Runway Safety Team (HND RST) in response to the recent incident, and discussions are underway. The main points are as follows.

- Measures such as applying green paint or runway end markings at the runway ends may offer some improvement in effectiveness if the surrounding environment is bright at night. However, the area around RWY05 is particularly dark, making any visual effect for pilots entirely unrealistic. Furthermore, this incident occurred at night, making such measures fundamentally misaligned with the key objectives needed for recurrence prevention.
- Regarding the measure of applying high-luminance paint to centerline markings, a trial conducted in 2024 at Yakushima Airport (RJFK), where phosphorescent paint was applied to runway centerline markings, has already yielded an evaluation indicating low effectiveness. Furthermore, a similar trial was conducted in the past at Yonago Airport (RJOH), where it was also evaluated as ineffective.

This time, HND RST appears to be attempting to determine recurrence prevention measures without investigating the cause or even conducting the fundamental risk assessment required for RST. First, it is necessary to proceed with discussions following the appropriate procedures stipulated by ICAO.

Summary

The first runway renovation work in 15 years since Haneda Airport's RWY D (RWY05-23) began operations in 2010 commenced in March 2025. Considering that this incident occurred just one month later, and a similar incident occurred six months after that, there is no doubt a causal relationship exists with the runway renovation work. Therefore, failing to implement appropriate recurrence prevention measures at this juncture would mean leaving open the risk of similar incidents recurring during the next runway renovation work in 15 years. We urge the HND RST members (the JCAB, Airlines, etc.) to recognize this point and engage in discussions from a long-term perspective, without postponing the issue.