

Aborted takeoff from taxiway, Boeing 737-800, Amsterdam Airport Schiphol, 6 September 2019

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1. About this report

On 6 September 2019, the Boeing 737-800 was scheduled for a passenger flight from Amsterdam Airport Schiphol to Chania airport, Greece. The flight crew received clearance to take off from Runway 18C, but the aeroplane ended up on Taxiway D and started its takeoff. When air traffic control noticed the aeroplane started to accelerate on Taxiway D, they instructed the crew to stop immediately. At the moment the Boeing 737 initiated the takeoff, no other aeroplanes or vehicles were present on Taxiway D. The crew aborted the takeoff and taxied back to the beginning of Runway 18C, after which the aeroplane took off safely. The flight crew continued the flight to Chania and after landing contacted the company about the occurrence.

The decision by the crew to continue the flight following the occurrence had consequences both for communication and the investigation process. Because shortly after the occurrence the decision was taken to still depart, the crew did not seek contact with air traffic control to discuss what had happened. Such contact can offer insight into the consequences of the occurrence for safety, and can generate useful options for follow-up actions. Following any serious incident, the Dutch Safety Board expects the captain to consult with the airline about further actions, even though she/he does have final responsibility to ensure the safe execution of the flight.

Furthermore, the decision to continue the flight led to a situation in which it was not possible to secure the cockpit voice recorder (CVR) data. Upon arrival at the destination airport, the recordings of the occurrence were overwritten because the CVR had a recording capacity of just two hours. This meant that the relevant CVR recordings were not available for the investigation.

The investigation revealed that the airline's procedures were not effective. This meant that the flight crew did not contact the airline about the occurrence in a timely manner, subsequently departing without further consultation, and as a consequence overwriting the recordings of the CVR.

CVR data are crucial to investigations into the decision-making processes of flight crews and for reconstruction of the sequence of events, since they record both voice and ambient sound signals. These recordings are needed to better understand why the flight crew believed they were lining up on the runway. They also offer insight into how the crew reached the decision to continue the flight, without first reporting the serious incident to their airline. Not having the CVR data available hampered the Dutch Safety Board in its investigation and restricted learning from this occurrence for all parties involved.

The Dutch Safety Board issued recommendations to the airline involved in the occurrence (Transavia), to all Dutch airlines, to the International Air Transport Association (IATA), the European Union Aviation Safety Agency (EASA) and the Integral Safety Management System Schiphol (ISMS).

2. General conclusion on follow-up to the recommendations

The follow-up to the first recommendation by Transavia was adequate. The airline has tightened up its procedures. In the event of a possible accident or serious incident, the airline is informed at the earliest convenient moment by the crew. The Operations Manual also contains a list of examples of serious incidents, including an aborted takeoff from a taxiway.

The follow-up by the Dutch airlines to the recommendation addressed to them is inadequate. They refer to EU/EASA and ICAO regulations, which are less far-reaching than the recommendation. The inadequate follow-up by these airlines means that all their aircraft with a maximum takeoff mass of more than 27,000 kg and an airworthiness certificate issued before 2022 will for the time being not be issued with a CVR with 25 hours storage capacity. Furthermore, the airlines consider that the recommended measure makes only a limited contribution to safety. However, this is not in line with the EU/EASA and ICAO regulations to which they themselves refer. Other reasons given by the airlines for failing to comply with the recommendation are the high costs, the duration of the retrofit¹ and the limited availability of the recorders. It is up to the airlines themselves to make the correct judgement between safety and costs. In this case, for the airlines, the cost argument clearly prevails above achieving a safety benefit. The Dutch Safety Board has not investigated whether there is indeed limited availability of recorders with a storage capacity of 25 hours. It is however likely that the market for CVRs will adapt to demand.

Promoting flight safety goes beyond compliance with rules and regulations. Specifically by following up on the recommendation, airlines can demonstrate that they have the intention to take the lead, rather than waiting for the introduction of new rules and regulations.

IATA claims it encourages airlines and the sector to be aware of the risks of the use of the wrong taxiway, runway or airport for taking off, and that it is investigating best practices and documentation for mitigating these risks. However, IATA has not followed up on the recommendation and refers to the ICAO standard for the installation of a CVR with a storage capacity of 25 hours. The investigation revealed that it is desirable that this standard be adapted. A worldwide organization like the IATA, with access to a large number of airlines, could take the initiative and exercise influence, certainly when it

¹ Replacement or upgrade.

comes to promoting safety and learning from occurrences. As is indeed the intention of the recommendation, the IATA could make a valuable contribution.

The EASA has provided a detailed explanation of its failure to follow up on the recommendation. The core of this explanation is that the recommended measure is not in line with the EU/EASA and ICAO regulations. EASA suggests referring the recommendation on to ICAO.

The Dutch Safety Board is aware that its recommendations go beyond the current ICAO regulations. The investigation provides grounds for expanding the regulations for the storage capacity of CVRs. CVR data are crucial to investigating the decision-making processes of flight crews and reconstructing the sequence of events in the case of an occurrence. This is also supported by findings from other aviation safety investigation agencies including the U.S. National Transportation Safety Board.

The Dutch Safety Board notes that the Dutch airlines, IATA and EASA on the one hand underwrite the importance of a CVR with a storage capacity of 25 hours for new aeroplanes (see ICAO and EASA regulations and actions via fleet renewal) but not for older aeroplanes. The arguments presented in this connection do not remove this contradiction. The parties involved could adopt an international leading role in promoting aviation safety by still complying with this recommendation. This also ties in with the announcement by the U.S. Federal Aviation Administration in March 2023 to make the installation of CVRs with a storage capacity of 25 hours compulsory.

Following this occurrence, ISMS did make a start on risk management measures, but has not fully followed up on the recommendation as intended.

Overview of follow-up per recommendation

In evaluating the extent to which recommendations from aviation reports have been followed up on, the Dutch Safety Board is bound by the assessment criteria from the European classification system, in line with EU Regulation No. 996/2010. The European classifications with the corresponding assessment criteria appear in an appendix to this memorandum.

Recommendations to	(Core of) Recommendation	Compliance
Transavia	1. Adapting procedures for the actions of flight crew in the event of abnormal procedures that (may) have significant consequences for flight safety.	Adequate

All Dutch airlines	2. Replace or upgrade existing cockpit voice recorders currently in use to accommodate for a storage capacity of at least 25 hours on aeroplanes with a certified maximum takeoff mass of more than 27,000 kg and with a certificate of airworthiness issued after 31 December 2001).	Inadequate
IATA	3. Encourage the members of IATA to replace or upgrade existing cockpit voice recorders currently in use to accommodate for a storage capacity of at least 25 hours on aeroplanes with a certified maximum takeoff mass of more than 27,000 kg and with a certificate of airworthiness issued after 31 December 2001).	Inadequate
EASA	4. Mandate that EU registered commercial air transport aircraft, with a certified maximum takeoff mass of more than 27,000 kg, and with a certificate of airworthiness issued after 31 December 2001, must be equipped with a cockpit voice recorder capable of retaining recorded data for at least 25 hours; implement this requirement as of 1 January 2028.	Inadequate
Integral Safety Management System Schiphol (ISMS)	5. Foster a work environment at Amsterdam Airport Schiphol that encourages the stakeholders of the ISMS to challenge each other about decisions that have had (or may have) significant safety implications.	Partially adequate

3. Follow-up per recommendation

Recommendation 1

To Transavia

Develop new procedures, or clarify existing procedures, that guide flight crews to consult with their airline at the earliest convenient moment, about abnormal situations that have had or may have significant flight safety implications, such as an aborted takeoff from a taxiway. Communicate to flight crews what range of occurrences are meant by these situations.

Response from Transavia

Transavia reported that the procedures for incident reports have been tightened up, so that in the event of a possible accident or serious incident, the airline is informed as quickly as possible by the flight crew.

Assessment of the follow-up

In accordance with the European classification, the follow-up to the recommendation is classified as adequate.

Explanation of the assessment

The procedures for incident reporting have been tightened up. In the event of a possible accident or serious incident, the airline is informed at the earliest convenient moment by the crew. The Operations Manual also contains a list of examples of serious incidents, including an aborted takeoff from a taxiway.

Recommendation 2

To all Dutch airlines

Replace or upgrade existing cockpit voice recorders currently in use to accommodate for a storage capacity of at least 25 hours on aeroplanes with a certified maximum takeoff mass of more than 27,000 kg and with a Certificate of Airworthiness issued after 31 December 2001, before 2028.

Response from the Dutch airlines

- *Transavia*

Transavia has decided to not adopt the recommendation. The airline argues that the value of CVR data to flight safety investigations is marginal in cases where the flight crew are also available for an interview with investigators.

Transavia also believes that the costs are disproportionate to the marginal safety benefit. Finally, the airline points out that a complete renewal programme is planned in the period 2023-2030. According to Transavia, all new aeroplanes will comply with the current standard for CVRs (storage capacity of 25 hours).

- *KLM*

KLM has announced that it will not be adopting the recommendation. KLM refers to the ICAO regulation (ratified by EASA) for aeroplanes with a maximum takeoff mass of more than 27,000 kg for which an airworthiness certificate has been issued on or after 1 January 2022.² KLM also issues the following reasons for non-compliance: the costs and duration of the upgrade, the limited availability of retrofit recorders on the market and the planned fleet renewal at KLM in the foreseeable future. KLM also believes that the recommendation has no direct impact on safety.

- *Corendon*

Corendon states that it will comply with the issued recommendation via fleet renewal. If nonetheless beyond 2028, aeroplanes are present in the fleet from construction years prior to 2022, Corendon will follow the EASA regulation and re-evaluate the recommendation in question.

- *KLM Cityhopper*

KLM Cityhopper will not be adopting and implementing the recommendation. The company believes that the recommendation has no direct impact on safety. KLM Cityhopper also offers as reasons for non-compliance the costs and duration of the retrofit and the limited availability of retrofit recorders on the market. KLM Cityhopper also points out that due to the current fleet renewal process, twelve new E195-E2 aeroplanes are equipped with the new 25-hour recorders, thereby conforming with the implementing regulation (EU) 2020/2036.³

- *TUI*

TUI suggests that in (fight) safety investigations in which the crew can be interviewed about the occurrence, the added value of (upgraded) CVR data is limited. In addition, according to TUI, the modification or replacement of CVRs to comply with the 25-hour recording requirement engenders high costs that are disproportionate to the limited safety benefit. TUI also refers to the limited availability of modifications for upgrading the existing recorders to a storage capacity of at least 25 hours. Furthermore, TUI argues that it already has one aircraft that has a CVR with a storage capacity of 25 hours.

² KLM is probably referring to ICAO Annex 6, part I.

³ This relates to the EASA Commercial air transport operations - Annex IV: CAT.IDE.A.185 amended in December 2020. Cockpit voice recorder: "(c) By 1 January 2019 at the latest, the CVR shall be capable of retaining the data recorded during at least: (1) the preceding 25 hours for aeroplanes with an MCTOM of more than 27 000 kg and first issued with an individual CofA on or after 1 January 2022; or (2) the preceding 2 hours in all other cases."

According to TUI, further fleet renewal will result in a larger number of aircraft that are equipped with a 25-hour CVR, in accordance with the stated requirement.

- *Martinair*

Martinair has not adopted the recommendation. According to Martinair, the primary intention of the CVR is to be able to listen back to the communication and ambient noises in the cockpit, in the event of an accident. In the case of an incident, the crew can be interviewed such that the safety benefit of an upgraded CVR is limited, according to Martinair. The company also considers that the high costs involved in the intended modification outweigh the limited safety benefit. Martinair further suggests that it complies with national and international regulations and certificate requirements. According to Martinair, an initiative to only implement the recommendation within the Netherlands harms the principle of maintaining equivalent regulations throughout the EASA area. EASA has already laid down requirements for adapting the recording duration of the CVR from 2 to 25 hours for aeroplanes with a Certificate of Airworthiness issued after 2022. According to Martinair, as the fleet is renewed, this will automatically result in the disappearance of a two-hour recording time for CVRs.

Assessment of the follow-up

In accordance with the European classification, the follow-up to the recommendation is classified as inadequate.

Explanation of the assessment

The Dutch airlines have no intention of installing CVRs with a maximum storage capacity of 25 hours in their existing fleet in the manner intended in the recommendation. Among others they refer to the implementing regulation (EU) 2020/2036 that mandates the installation of CVRs of this kind for aeroplanes with a maximum takeoff mass of more than 27,000 kg and for which a Certificate of Airworthiness was first issued on or after 1 January 2022. This means that for the time being, aeroplanes of that weight category with a Certificate of Airworthiness issued before 2022 will not be fitted with a CVR with a 25-hour storage capacity. This situation will only change gradually in the course of fleet renewal. However, this will take much longer than intended with the recommendation (before 2028).

The argument presented by certain airlines that the installation of a CVR with a storage capacity of 25 makes only a limited contribution to safety is not in line with the international standards and legislation from both the ICAO and the EU to which the airlines themselves refer. After all, those regulations are specifically intended as a safety measure for incident investigation.⁴ The safety benefits to be achieved in aeroplanes with a Certificate of Airworthiness issued after 1 January 2022 surely apply equally to the existing fleet.

⁴ See also ICAO, *State Letter AN 11/1.3.29-16/12, Adaption of Amendment 40 to Annex 6, Part I, Attachment F, par. 2.5.*

The primary purpose of the CVR is to record the communication in the cockpit. An analysis of these recordings gives an insight into the operational procedures and the interaction between and performance of the flight crew members, including potential factors that influence human performance. In addition, a CVR is also able to record ambient noises that can make a contribution to a safety investigation. The information from a CVR can therefore contribute to gaining a clear insight into the situation facing the flight crew, from moment to moment.

The importance of a CVR with a storage capacity of 25 hours is also reflected in past incident investigations. The investigation report concerning this occurrence, for example, states that in three previous investigations by the Safety Board, the CVR recordings were not available, while they could have contributed to learning lessons from the occurrence. Moreover, in 2018, in a recommendation by to the U.S. Federal Aviation Administration (FAA), the U.S. National Transportation (NTSB) pointed out that since 2003, no CVR recordings were available for 31 NTSB investigations, which could have provided valuable information about the occurrence in question.⁵ With that in mind, the NTSB issued the recommendation, on all existing and new aeroplanes with a mandatory CVR and flight data recorder, to extend the storage capacity to 25 hours. Also taking account of six recent safety incidents in which the CVR data were no longer available, in March 2023, the FAA announced its intention to initiate regulations to comply with the recommendation from the NTSB.⁶

A number of airlines suggest that following an occurrence, interviews can be held with the flight crew, a fact that limits the safety benefit of an upgraded CVR. However, this is contradicted by the report of the Safety Board, the above referred to findings of the NTSB and the proposed FAA regulation.

The airlines point to the high costs, the duration of the retrofit and the limited availability of recorders. The Safety Board issued its recommendation on the basis of the incident investigation, stating that compliance with the recommendation will result in a safety benefit. It is up to the airlines themselves to make the correct judgement between safety and costs. In this case, for the airlines, the cost argument clearly prevails above the investments in safety benefits. This is not in the interest of flight safety. The Dutch Safety Board has not investigated whether there is indeed limited availability of recorders with a storage capacity of 25 hours. It is however likely that the market for CVRs will adapt to demand.

⁵ National Transportation Safety Board, [Safety Recommendation Report Extended - Duration Cockpit Voice Recorders](#), 2 October 2018.

⁶ See: [Recent Incidents Jump-Start FAA's CVR Upgrade Proposal](#), Aviation Week Network, 17 March 2023 and [FAA Proposes Extending Cockpit Voice Recording to 25 Hours](#), FLYING, 21 March 2023.

Recommendation 3

To the International Air Transport Association (IATA)

Encourage the members of IATA to replace or upgrade their existing cockpit voice recorders currently in use to accommodate for a storage capacity of at least 25 hours on aeroplanes with a certified maximum takeoff mass of more than 27,000 kg and with a Certificate of Airworthiness issued after 31 December 2001.

Response from IATA

In its response, IATA underlines the importance of preventing the use of the wrong taxiway, runway or airport, for take off. IATA encourages airlines and the sector to be aware of these risks and to investigate the best practices and documentation (guidance material) for mitigating those risks. IATA has included documentation of this kind in its [Public Safety Risk Management Framework](#).

However, IATA will not comply with the recommendation itself, because the organization is of the opinion that it goes beyond the ICAO standard that specifies that a CVR with a recording capacity of 25 hours should be installed in aeroplanes with a maximum takeoff mass of more than 27,000 kg with a Certificate of Airworthiness issued on or after 1 January 2022. IATA suggests that it collaborated closely with ICAO in drafting this standard, and concluded that there is no clear added value in the retrofitting of CVR equipment with a larger recording capacity, in achieving this goal.

Assessment of the follow-up

In accordance with the European classification, the follow-up to the recommendation is classified as inadequate.

Explanation of the assessment

IATA refers to the ICAO standard for the installation of CVRs with a recording capacity of 25 hours. However, the recommendation to IATA does not relate to this standard, but to the role IATA can play in encouraging its members to replace or upgrade existing CVRs, in advance of the obligation. An organization that operates worldwide, with access to a large number of airlines, can take the initiative and exercise influence, certainly when it comes to promoting safety and learning from occurrences.

Recommendation 4

To the European Union Aviation Safety Agency (EASA)

Mandate that EU registered commercial air transport aircraft, with a certified maximum takeoff mass of more than 27,000 kg, and with a Certificate of Airworthiness issued after 31 December 2001, must be equipped with a cockpit voice recorder capable of

retaining recorded data for at least 25 hours; implement this requirement as of 1 January 2028.

Response from the European Union Aviation Safety Agency (EASA)

In its detailed response, the EASA refers to the establishment of regulations for the installation of CVRs with a maximum recording capacity of 25 hours, in combination with regulations that relate to the storage of recordings and occurrences subject to a reporting requirement. EASA thereby refers to the requirement that EU registered commercial air transport aeroplanes with a certified maximum takeoff mass of more than 27,000 kg and a certificate of airworthiness issued on or after 1 January 2022, must be equipped with a CVR with a recording capacity of 25 hours.⁷ According to EASA, this regulation is in line with ICAO Annex 6. This Annex contains a similar provision.

EASA notes that the recommendation imposes a stricter requirement than the ICAO regulation. Airlines not registered in the EU are only required to comply with the ICAO regulation. If EASA were to follow up on this recommendation, the amended regulation would not apply to those airlines, despite the fact that the problem on which this recommendation is based is equally applicable to them. According to EASA, the recommendation does therefore not facilitate the investigation of serious incidents and accidents for those airlines in which a non-EU Member State is involved.⁸ For that reason, EASA suggests that the recommendation be passed on to ICAO.

Assessment of the follow-up

In accordance with the European classification, the follow-up to the recommendation is classified as inadequate.

Explanation of the assessment

EASA does not follow up on the recommendation due to the existing regulation which is in line with the international standards established by ICAO.

The Dutch Safety Board is aware that its regulation goes further than the current ICAO and EASA regulations. However, the investigation provides grounds for adapting regulations governing the recording capacity of CVRs. CVR data are crucial to investigating the decision-making processes of flight crews and reconstructing the sequence of events in the case of an occurrence.⁹ EASA can make a contribution by following up on the recommendation and thereby adopting the role of international

⁷ Commission regulation (EU) no. 965/2012, Part-CAT, CAT.IDE.A.185.

⁸ In this matter, EASA is referring to 'State of Occurrence, State of Design or State of Manufacture' as described in Annex 13 of the ICAO.

⁹ See: ICAO, *State Letter AN 11/1.3.29-16/12, Adaption of Amendment 40 to Annex 6, Part I, Attachment F, par. 2.5*: "The extended duration CVR will ensure the availability of CVR data for accident and incident investigations, especially for serious incident investigations, which in many cases identifies precursors to accidents." See also: National Transportation Safety Board, [Safety Recommendation Report Extended - Duration Cockpit Voice Recorders](#), 2 October 2018 and [NTSB Recommends Extended-Duration CVRs - Valuable CVR data continues to be overwritten and not available for investigations, says NTSB](#), Flight Safety Foundation, 19 October 2018.

frontrunner. This also ties in with the recent announcement from the U.S. Federal Aviation Administration to make the installation of CVRs with a storage capacity of 25 hours compulsory.¹⁰

Recommendation 5

To Integral Safety Management System Schiphol (ISMS)

Foster a work environment at Amsterdam Airport Schiphol that encourages the stakeholders of the Integral Safety Management System to challenge each other about decisions that have had or may have significant safety implications.

Response from Integral Safety Management System Schiphol (ISMS)

In its response, ISMS reports that the participating parties do question and challenge each other, which results in improved insights and joint decisions. The follow-up to the incident with the aborted takeoff on taxiway D, according to the ISMS, is a good example. Following this incident, the runway and ground air traffic controllers drove around the airport, to gain a better understanding of the hotspots on the airport and the perspective from the cockpit.

The ISMS also conducts awareness campaigns to draw the attention of operational personnel to interface risks. Recent examples include a campaign for preventing runway incursions and a campaign to improve awareness among ground handling personnel of the risks of working on airside. Under the auspices of the ISMS, working visits are also organized between air traffic control, towing control and ground handlers.

In response to the recommendation, ISMS investigated whether actively challenging operational decisions during operations could be desirable. Although it could contribute to safety, ISMS also sees disadvantages in this approach. In operational real-time situations, the parties involved generally do not have the complete picture that the other party does in its context. Moreover, according to ISMS, pilots and traffic controllers are not trained to assess situations in another field of specialization. Finally, according to ISMS, the communication medium (radio telephony) is not suitable for the joint evaluation of situations. For these reasons, ISMS believes that the risk of challenging during operations will result in confusion in implementation and/or uncertainty in the mind of the person challenged, which in turn will result in new risks. There is consensus among ISMS participants that these new risks should be avoided.

Finally, ISMS suggests that the specific background to the recommendation was a decision by the flight crew in question, to continue its flight. In the Standing Committee

¹⁰ See: [Recent Incidents Jump-Start FAA's CVR Upgrade Proposal](#), Aviation Week Network, 17 March 2023 and [FAA Proposes Extending Cockpit Voice Recording to 25 Hours](#), FLYING, 21 March 2023.

Flight, ISMS called upon the participating parties to review their internal procedure on this point and to discuss the outcomes during the next standing committee meeting.

Assessment of the follow-up

In accordance with the European classification, the follow-up to the recommendation is classified as partially adequate.

Explanation of the assessment

ISMS set to work with measures aimed at managing the risks in the event of decisions that have had or may have significant safety implications. However, ISMS sees disadvantages in encouraging stakeholders to challenge each other about those decisions.

The purpose of the recommendation by the Dutch Safety Board is to bring about broader risk identification and mitigation among all stakeholders at Schiphol. The mutual challenging by parties involved of decisions that have had or may have significant flight safety implications can also be achieved without this resulting in confusion in execution and/or uncertainty in the mind of the challenged party. The stakeholders can point out to each other observed risks, taking account of each party's individual responsibilities. This in fact ties in with the safety culture within aviation, which is specifically focused on structural learning from each other and risk awareness.