

# **AIRCRAFT ACCIDENT AND INCIDENT INVESTIGATION AND PREVENTION BUREAU**



## **SAFETY RECOMMENDATIONS ISSUED**

**2020-2024**



DATE	TITLE	SYNOPSIS	SAFETY RECOMMENDATIONS ISSUED
3/7/2020		<p>On 3<sup>rd</sup> July, 2020, at about 0840hrs TSA's registered aircraft, TU-LAK crashed on the South boundary of Sector 23 banana plantation for GEL. The single seater aircraft had departed from Runway 28(C) to continue its routine crop spraying activities for the day.</p> <p>The nose wheel of the aircraft struck a guy cable running just above the canopy of the plantation used to hold up the branches of the banana plants. The aircraft then flipped over and crashed into a ditch. The aircraft was destroyed and the pilot was seriously injured.</p> <p>The factors that contributed to the above accident were identified to be mainly Human Factors. In order to prevent a probability of such occurrence, the committee has recommended that TSA develops standard procedures to cover emergency situations including extended periods of operations, and also intensify Human Factors training for its pilots.</p>	<p>A.TSA should develop standard procedures which will address issues pertaining to emergency situations such as extended periods of operations.</p> <p>B.TSA should continually update their pilots on human factors issues relating to stress, complacency and fatigue.</p> <p>C.TSA should consider establishing two-way emergency communication between aircraft and ground.</p> <p>D.GEL should repaint the red and white markings on the supporting poles and also mark the guy cables with reflective aluminium strips.</p>



3/9/2021	REPORT ON THE BIRD STRIKE INCIDENT INVOLVING KLM FLIGHT KL 590 BOEING 777-300 ER AIRCRAFT WITH REGISTRATION PH-BVK ON 3RD SEPTEMBER, 2021 AT KOTOKA INTERNATIONAL AIRPORT, ACCRA, GHANA	<p>Aircraft Incident No. : AIB/2021/09/03/INCID Registered Owner and Operator: KLM Royal Dutch Airlines Manufacturer: The Boeing Company Aircraft Type: B777-300 ER Aircraft Serial Number: 42172 Registration: PH-BVK Place of Incident: Kotoka International Airport (KIA), Accra, Ghana Date: 3rd September, 2021</p> <p>Notification Having been made aware of an occurrence involving a KLM flight on the 3rd September, 2021 and in compliance with Annex 13 to the Convention on International Civil Aviation and the Ghana Aircraft Accident and Incident investigation and Prevention Bureau Act, 2020 (Act 1028), a team of four (4) Investigators was dispatched by the Commissioner of AIB to the site the next day, 4th September, 2021 to examine, inspect, collect data and documentation on the aircraft to enhance the investigation of the incident. Notification of the incident was sent from the AIB Ghana to the following agencies and authorities on 6th and 7th September, 2021 that a KLM Royal Dutch Airlines Boeing 777-300 ER (Flight KL 590) from Accra to Amsterdam had executed an RTO due to a bird strike at the KIA on 3rd September, 2021.</p>	<p>A.GACL should intensify coordination with stakeholders concerning Bird and Wildlife Hazard Management.</p> <p>B.GACL should increase wildlife mitigation procedures especially during the peak hours of operations.</p> <p>C. ATS/ANS should consider the establishment of a discrete frequency between flight crew and RFFS with its appropriate protocols.</p>
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<p>17/03/2022</p>	<p>ACCIDENT INVOLVING TRAVAUX ET SERVICES AERIENNES (TSA), HUMBER AVIATION M.D.C 912 STA AIRCRAFT WITH REGISTRATION TU-LAB, AT KASUNYA - ASUTUARE (EASTERN REGION) ON 17TH MARCH, 2022.</p>	<p>On 17th March, 2022, at about 0803hrs TSA's registered aircraft, TU-LAB crashed between field C and D of Sector 22 banana plantation for GEL. The single seater aircraft had departed from Runway 28(C) to continue its routine crop spraying activities for the day.</p> <p>The aircraft struck a power line that runs across end of the Sector. The aircraft crashed into the adjacent field and the caught fire. The aircraft was destroyed and the Pilot evacuated without any injury.</p> <p>The factors that contributed to the above accident were identified to be mainly Human Factors. In order to prevent a probability of such occurrence, the Investigation Team has recommended that TSA develops standard procedures to include face-to-face handing over and taking over for Pilots and also intensify Human Factors training for its Pilots and related staff.</p>	<p>A.TSA should develop standard procedures which insist on face-to-face handing over and taking over its Pilots and other related staff.</p> <p>B.TSA's face-to-face handing over and taking over procedure so developed should include at least one observatory operation for in-coming Pilots or related staff.</p> <p>C.TSA should continually update their personnel on human factors issues relating to stress and fatigue.</p> <p>D.TSA should develop a monitoring system to update itself on the operations of personnel and undertake precautionary measures where necessary.</p> <p>E.TSA should consider the use of alternative spraying methods such as unmanned aircraft for crop spraying.</p>
<p>14/04/2022</p>	<p>FUEL INCIDENT INVOLVING SOUTH AFRICAN AIRWAYS, A330-300 AIRCRAFT REGISTRATION ZS-SXM</p>	<p>During the refueling of SAA flight SA053 (A330-300 registration, ZS-SXM) in Accra (DGAA) on 14 April 2022, utilizing a PUMA Energy refueling truck (RV01), several automatic interruptions of the process were encountered. As a final check during troubleshooting to ascertain the cause of the automatic interruptions, sump drain of the aircraft wing fuel tanks was carried out to check for the presence of water. Water was reported to be present in the tanks by the SAA engineer.</p>	<ol style="list-style-type: none"> <li>1. Airline operators should report incidents promptly to the appropriate local authorities.</li> <li>2. Technical crew and Refuellers must ensure that the fuel clear and bright check is conducted together with the water test procedure during refueling. It should be thorough and must follow the IATA recommended guidelines.</li> <li>3. Airline operators should ensure that the regular maintenance water drain checks of aircraft fuel tanks is meticulously adhered to as</li> </ol>



	<p>The water was reported to have been drained and refueling was continued and completed from a fuel hydrant on the same Bay (D1) using a PUMA Energy hydrant dispenser vehicle (HD01).</p> <p>All water tests carried out on the fuel from the refueling truck (RV01) as well as the hydrant dispenser (HD01) during the refueling process indicated the absence of water in the fuel being supplied. The protracted fueling process resulted in the delay of flight SA053, which departed DGAA on 15 April 2022 at 1508 UTC as flight SA9053.</p> <p>At about 2000 UTC whilst in cruise at FL410 (approximately 5hrs after departure), the Flight Deck Crew (FDC) received an ECAM message indicating a Right-Wing Fuel Pumps Low Pressure which led to a descent to FL190 to enable gravity fuel feed as per the appropriate published procedure.</p> <p>At 2018 UTC the FDC received an ECAM message indicating Engine #2 stall. The FDC reduced thrust on Engine #2 as per ECAM actions. Since there was no exceedance of engine parameters, the engine was not shutdown. The FDC increased thrust on Engine #2 twice after the initial Engine #2 stall ECAM message, and on both occasions the FDC received further ECAM messages indicating Engine #2 stall.</p> <p>The flight continued to Johannesburg (FAOR) with manual thrust control and landed safely without further incidence.</p>	<p>recommended. Water drain procedures must always follow recommended guidelines.</p> <p>4. Airport authorities must monitor and ensure that fuel and lubricants drained from aircraft and ground equipment is disposed of at designated safe locations. Airline operators and Service providers should drain fuel and lubricants into special containers for disposal at designated safe locations. The regulator should ensure compliance.</p> <p>5. Airline operators must conduct due diligence prior to signing on new fuel companies. Quality Audits should be carried out by Airline Compliance departments on fuel companies at all Airports where fuel is uplifted to ensure quality standards are maintained.</p> <p>6. Airline operators should be familiar with the various special equipment that fuel companies use to ensure the quality of fuel supplied, e.g.: EWS system. Operators should disseminate information on such systems to operating crew and maintenance personnel.</p> <p>7. Airbus and Rolls Royce Plc should conduct further investigations into the cause of engine no.2 ECAM stall indication at FL190 during fuel gravity feed procedure on the event flight.</p>
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	<p>The investigation identified the following causes/contributory factors to the fuel interruptions:</p> <p>On Ground Incident</p> <ul style="list-style-type: none"><li>• Puma Energy was not the regular fuel supply contractor of SAA. Crew were briefed before the flight on the need to use an alternate fuel company. This could have influenced the crew's judgement by creating doubts about the quality of fuel delivered by the refueller RV01 during refuelling challenges.</li><li>• Repeated auto interruptions, multiple aircraft fuel system resets and satisfactory water checks performed on the fuel from the truck, created uncertainty as to the cause of the interruptions for the SAA FDC, Engineer and the Refuellers.</li><li>• The Engineer had not experienced such a multitude of fuel auto interruptions previously.</li><li>• The resultant delay in fueling and its effect on not meeting an on-time departure put undue pressure on the Engineer, FDC and the Refuelling crew.</li><li>• The initial water drained from the aircraft's fuel tanks led to a fixation on a possible water contamination from refueller RV01 even</li></ul>	<p>8. Airbus and Rolls Royce Plc should conduct further investigations to establish the cause of the failure of engine no. 2, to respond appropriately at FL190 during gravity feed procedure on the event flight.</p>
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	<p>though the water checks indicated otherwise.</p> <ul style="list-style-type: none"><li>• The continuation of fuel drainage beyond the point at which the presence of fuel phase in the sample was observed.</li></ul> <p>In-flight Incident</p> <ul style="list-style-type: none"><li>• There may have been icing in the right tank pump output pressure sense lines.</li><li>• The main fuel pump low-pressure warnings may have been erroneously generated by the possible freezing of fuel pressure switches. The result would be that normally operating fuel pumps would be switched off as per the displayed Electronic Centralized Aircraft Monitor (ECAM) procedure.</li><li>• Engine no. 2 failed to respond appropriately at FL190 during fuel gravity feed procedure on the event flight.</li></ul> <p>Eight safety recommendations have been made.</p>	
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22/07/2022	<p>On July 15, 2022, the Aircraft Accident and Incident Investigation and Prevention Bureau (AIB Ghana) was notified by the Ghana Air Force about potential hazards at the Wa Airport that may lead to an aircraft accident or incident.</p> <p>An investigation was conducted on 22<sup>nd</sup> July, 2022 to ascertain any preventive action that the AIB considers necessary to be taken promptly to enhance safety in aviation. The investigation was based on data collected and analyzed and research conducted for the purpose of preventing aircraft accidents or incidents.</p> <p>The observations made during the investigation and the findings as to the causes and contributing factors of the potential hazards are:</p> <p>a) Findings:</p> <ul style="list-style-type: none"><li>i. Loading and unloading of baggage from the aircraft parked on the runway</li><li>ii. Boarding and disembarking of passengers from the aircraft parked on the runway</li><li>iii. Constant use of ground vehicle on the runway</li><li>iv. Unpaved airside</li><li>v. Runway damage</li><li>vi. FODs such as loose aggregates of the asphalt and chippings, on the runway</li></ul> <p>b) Causal factors:</p> <ul style="list-style-type: none"><li>i. Inadequate aprons in the airport</li><li>ii. Air side of the terminal coated with chippings</li></ul>	<p>A. It is recommended that the Ghana Civil Aviation Authority should intensify its surveillance and monitoring function of the WA Airport</p> <p>B. It is recommended that the Ghana Civil Aviation Authority should schedule flights in a manner such that one aircraft is on the ground at a time at the Wa Airport.</p> <p>C. It is recommended that the Ghana Airports Company Limited should intensify its FOD management at the Wa Airport in the following areas: FOD prevention, detection, removal and evaluation.</p> <p>D. It is recommended that the Ghana Airports Company Limited paves the airside.</p> <p>E. It is recommended that the Ghana Airports Company Limited constructs additional aprons at the Wa Airport.</p> <p>F. It is recommended that the Ghana Airports Company Limited constructs a concrete pavement at the end of the runway to serve as alternate apron (immediate apron).</p>
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27/09/2022		<p>The Aircraft Accident and Incident Investigation and Prevention Bureau (AIB Ghana) paid a familiarisation visit to the Tamale Airport. At the airport, the team encountered problems at the airport and thereby came up with the following safety recommendations.</p>	<p>A. It is recommended that the Ghana Civil Aviation Authority issues a NOTAM to prompt airline operators of the current state of the Tamale Airport Taxiway M2 and apron</p> <p>B. It is recommended that the Ghana Civil Aviation Authority should intensify its aerodrome inspection at the Tamale Airport.</p>
19/10/2022		<p>On October 19, 2022, the Aircraft Accident and Incident Investigation and Prevention Bureau (AIB Ghana) was notified by the Ghana Civil Aviation Authority that about two occurrences involving our Bombardier DHC8-400 aircraft with serial number 4204 and registration marking 9G-BPD which took place on Tuesday, October 18, 2022 and Wednesday, October 19, 2022.</p>	<p>A. It is recommended that the Ghana Civil Aviation Authority grounds the aircraft for maintenance</p>



		<p>A team of investigators from the AIB followed up to ascertain the reason for the recurrence of this landing gear failure.</p> <p>Following the occurrence on the 18th October, the Passion Air engineers troubleshot the defect and replaced the Right Main Landing Gear Door Solenoid Sequence Valve in accordance with AMM 32-31-41-000-801/400-801. A functional test was carried out satisfactorily and the aircraft was released back to service.</p> <p>After the recurrence of the same failure on the 19th, the Passion Air engineers as part of troubleshooting, swapped the Right Gear Downlock Sensor in accordance with AMM 32-06-000/400-802. Multiple retraction and extension tests were conducted satisfactorily before the aircraft was released back to service. The issue was being monitored by the engineers as at that time.</p> <p>On Monday, 24 October 2022, the same aircraft suffered from a Right Landing Gear Unsafe Warning Light coming on after the landing gear was lowered on approach into Kumasi. The pilots followed the Quick Reference Handbook (QRH) and confirmed with the Alternate Gear Locked-down Indicator Light that the landing gears had been fully extended and locked. After confirmation, the pilots retracted the landing gear and opted to return to Accra. Upon reaching Accra, they then went ahead to land using the Alternate Landing Gear System. After landing safely, the passengers were disembarked. Since then, the</p>	
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	<p>aircraft was grounded, given the repetitive nature of this defect.</p> <p>On Wednesday, 26 October, 2022, a team of investigators visited the maintenance hangar where the troubleshooting was being carried out on the aircraft, to interact with the engineers to get a clearer understanding of the problem. The engineers enlightened the investigators on the gravity of the problem. The company had invited engineers from the aircraft manufacturer to come and support them in the troubleshooting of this problem. They assured the investigators that the aircraft was not going back into service until the problem had been rectified.</p> <p>Following the grounding of 9G-BPD on 24th October 2022, the engineers troubleshot and traced the Landing Gear Indication Discrepancy to a fault in the indication system. The wiring was repaired satisfactorily in accordance with AMM 20-30-11. Also, operational and functional tests of the landing gear primary extension and retraction were carried out satisfactorily in accordance with AMM 32-31-00-710-801/720-801. The aircraft resumed flying on 28th October 2022.</p> <p>The Commissioner went on test flights on 25th and 28th November 2022 on the same route (ACC-KSI-ACC). The Commissioner found the performance of the landing gear to be satisfactory and the landing gear lights were green. Also, following that no further related defects and occurrences have been recorded, the investigation was</p>	
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		closed on 28th November 2022.	
22/03/2023	ENGINE FAILURE SERIOUS INCIDENT INVOLVING AFRICA WORLD AIRLINES AIRCRAFT, EMBRAER 145LR, 9G-AFR	The investigation identified the following causal factors: The investigation identified the following contributory factors: Therefore, four (4) Safety Recommendations have been made in this report.	<p>a. The engine manufacturer should re-evaluate and possibly adjust the threshold for Engine Health Monitoring (EHM) alerting for High-Pressure Turbine (HPT) section deterioration. Establish more sensitive trend-signature parameters to detect failures earlier.</p> <p>b. The airline operator should ensure that DFDR/CVR/QAR/Non-volatile memory recordings information must be downloaded instantaneously, after any occurrence, before any maintenance action is carried out on the aircraft.</p> <p>c. The airline operator should review all in-service engines concerning the engine logbook entries and update data.</p> <p>d. All engines imported as spare must have a Serviceable label with details of the type of inspection carried out before importing. Additionally, the regulator must be informed of all imported engines and relevant documents captured indicating the state of the engine before importing.</p>



<p>2/2/2024</p>	<p>REPORT ON CABIN DEPRESSURIZATION SERIOUS INCIDENT INVOLVING AFRICA WORLD AIRLINES AIRCRAFT, 9G-AET</p>	<p>1.1 On 2nd February 2024 an Embraer 145 LR aircraft operated by Africa World Airlines was on a commercial service between Accra and Tamale. After the aircraft climbed to an altitude of 22,000ft, it encountered slight icing. At 24,000ft, the aircraft was out of icing and the flight was progressing normally until the captain spotted the Cabin pressure at 8,600ft showing amber. The pilots commenced the relevant emergency procedures and made a normal landing at Kotoka International Airport. No one was injured and the aircraft was not damaged.</p> <p>1.2. The Aircraft Accident and Incident Investigation and Prevention Bureau (AIB Ghana) was unable to identify the cause of the depressurisation despite extensive testing and a specialist examination of the pressurisation system.</p> <p>1.3. The Bureau made findings relating to the following safety issues: non-adherence to the published emergency checklists for a loss of cabin pressure. The training of cabin crew in the use of emergency oxygen equipment and the cabin depressurisation procedure.</p> <p>1.4. The operator acted to correct these issues. Therefore, the Bureau made</p>	<p>A.Regulator should ensure regular checks on aircraft emergency (oxygen) equipment during C-checks.</p> <p>B.The Regulator should educate on urgency and distress calls to improve Pilot compliance with this requirement.</p> <p>C.The Operator must ensure proper procedure of communication of occurrence between the Flight Crew and the aircraft engineers.</p>
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	<p>three safety recommendations regarding them.</p> <p>1.5. In addition, the investigation recommended the demonstration for the chemical oxygen generator and the deployment of the oxygen masks to be tested manually and automatically. AWA informed the Bureau that the automatic test can not be conducted due to the possibility of damage to aircraft and personnel.</p> <p>1.6. The key lessons identified from the investigation into this occurrence were as follows:</p> <ul style="list-style-type: none"><li>• An unexpected loss of cabin pressure in any aircraft is a serious event that can cause both passengers and crew to lose consciousness rapidly from a lack of oxygen. In such an event the appropriate emergency actions must be undertaken immediately. Where oxygen masks are fitted, passengers and cabin crew must put on their masks and await further instruction from the flight crew.</li><li>• The purpose of emergency procedure checklists is to ensure that crew members do not miss an important action at a critical time of high workload. Therefore, unless the captain has an exceptional reason to deviate from a checklist, it should be performed from beginning to end, if possible without interruption, and without omitting any step.</li><li>• Crew members must be thoroughly trained in and familiar with all emergency equipment and procedures</li></ul>	
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		<p>because the equipment and procedures are for their own protection as well as that of the passengers. They need to be alert for emergency situations that differ from the standard scenarios that are practiced and demonstrated repeatedly.</p> <ul style="list-style-type: none"><li>• Special care must be taken with the maintenance of aircraft emergency equipment, such as oxygen systems.</li></ul>	
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