

# Aircraft Incident Investigation Report on

## Ethiopian Airlines Aircraft B767-300(ET-AMG)

### Runway Incursion

# **Addis Ababa Bole International Airport**

October 12, 2014



# ETHIOPIAN CIVIL AVIATION AUTHORITY

# Accident Investigation Bureau

Report No. II- /14  
Civil Aviation Authority  
P.O. Box 978  
Addis Ababa  
Ethiopia

## **Forward**

This incident investigation report is prepared on the basis of the factual information gathered during the investigation process in accordance with Annex 13 to the Convention on International Civil Aviation, of which Ethiopia is a signatory and with the Ethiopian Air Accident investigation Regulation and Directive.

The investigation has neither been conducted to apportion blame, nor to assess individual or collective responsibility. The sole objective of this investigation is to establish the root cause(s) of the incident, draw lessons from what happened and come with appropriate recommendations, in order to prevent similar reoccurrences in the future and where appropriate, to increase the overall safety of the aviation system.

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## **ABBREVIATIONS**

A	-	Alpha
A/C	-	Aircraft
AD	-	Airworthiness Directive
APIB	-	Accident Prevention & Investigation Bureau
ATC	-	Air traffic control
ATS	-	Air traffic service
B	-	Bravo
C	-	Charley
CPL	-	Commercial pilot license
D	-	Delta
E	-	Echo
EAE	-	Ethiopian Airport Enterprise.
EAL	-	Ethiopian Airlines
ECAA	-	Ethiopian Civil Aviation Authority
F	-	Fox-trot
Hpa	-	HectoPascal's
ICAO	-	International Civil Aviation Organization.
IC	-	Investigation committee
IIC	-	Investigator In Charge
L/D	-	Landing gear
Km	-	Kilometer
Mt	-	Meters
Nm	-	Nautical miles
QNH	-	Corrected Mean sea level pressure
RWY	-	Runway
S/N	-	Serial number
TSN	-	Time since new
UTC	-	Universal time coordinated
Z	-	Zulu time

## **Incident investigation report on ET-AMG Boeing 767-300**

### **General Information**

Air craft type and model .....B767-300

Aircraft registration.....ET-AMG

Owner.....EAL

Crew.....CPL Licensed

Flight destination.....Dare Salam ,Zanzibar

Flight purpose.....Scheduled passenger flight

Place of incident .....Bole International Airport

Date & time of occurrence.....October 12/2014 at 0758z

Involved driver..... Airport fire man

Car call sign.....Red one

Aerodrome Tower controller ..... ECAA Licensed

Aerodrome ground controller ..... ECAA Licensed

Passengers on board.....152 passengers

Crew onboard..... .8 crew

## **Synopsis**

On October 12, 2014 Ethiopian 805 Boeing 767- 300 registrations ET AMG was scheduled to flight from Addis Ababa Bole International airport to Dare Salam, Zanzibar. The aircraft was forced to make a high speed rejected take off. The Incident occurred while ETH. 805 was obliged to abort its take off run at a speed of 135 Knots to avoid a possible collision with a vehicle which was moving on the center of the runway 07R proceeding to end of runway 25.

## **Notification**

ECAA was notified on October 12,2014 at 0840 UTC. Following the notification the ECAA assigned the investigation team to investigate the incident.

## **Purpose of safety investigations**

The objective of a safety investigation is to enhance safety and to avoid reoccurrence of such mistakes in the future. To reduce safety related risk it is not the objective of an investigation to determine blame or liability.

The Final report includes the following main parts:

- 1/ Factual information
- 2/ Analysis
- 3/ Conclusions
- 4/ Safety recommendation

## **1. Factual**

### **1.1 History of the of flight**

On 12 of October 2014 at 0758Z Ethiopian Boeing 767-300 flight ET-805 registered ET-AMG was taking off from Addis Ababa Bole international Airport on a scheduled passenger flight to Zanzibar, Zanzibar.

On board 152 passengers and eight crew members, after the aircraft 767-300 commenced the take off roll from runway 07R, a car with radio call sign Red-1 seen on the center of the runway, on which the take off was rejected.

The driver of Red -1 was tasked to scare birds' on the active runway. This operation permitted by Air traffic controller to move from Fox-trot to Alpha and active runway 07R.

Three aerodrome Air traffic controllers were assigned in the morning shift of the incident day, who work on two control positions with two frequencies.

Tower Controller assigned at tower control position with frequency 118.1 to issue landing , give takeoff clearance, after getting permission from approach radar controller and coordinate clearance with ground controller for any traffic or vehicle movement on the movement area .

Ground Controller assigned at ground control position with frequency 121.9 to control the ground movement of aircraft and vehicles on the movement area and coordinate with Tower Controller to give clearance for vehicle or other thing to enter active runway.

On the incident day the third aerodrome controller who *was* assigned as a duty aerodrome controller to give a rest for the other controllers and assist both seats. But on the time of the incident third aerodrome controller was on tea break.

The supervisor coverage was not available during weekends and there was no supervisor assigned on the day of the incident.

## Sequence of incident events

- At 0736 UTC, Prior to the incident departure aircraft pilot with call sign ETH 927 informed the controller that they saw flocks of birds movement on taxiway F between B and A. and advised to be chased.
- At 0741 UTC the ground controller requested airport fire brigade watch room to scare birds & check the runway for dead Bird carcass.
- At 0743 UTC ET-805 requested start up and push back, Ground controller permitted the request
- At 0744 UTC a car from airport fire brigade with call sign Red 1 requested to enter Fox- trot and move to alpha. Ground controller granted permission for the vehicle
- At 0752.11 UTC Red-1 informed Ground controller reaching Alpha and reported that fox-trot was clear, subsequently asked to proceeded from active runway Alfa to Echo.
- At 0752.20 UTC Ground controller refused Red-1 movement and advised to stay at Alpha safe area, considering traffics on holding point A and landing traffic on short final.
- At 0754 UTC Red -1 requested to enter active runway, considering the field is free.
- Ground controller cleared Red -1 to enter on active runway. She said that She had advised and coordinated the movement of the car with the Tower controller but Tower controller doubtfully said that she may or may not informed me .
- At 0755.4 UTC Ground controller cleared the scheduled aircraft flight ETH 805 Boeing 767-300 from Addis to Dare Salam Via UT129 to climb and maintain 370 initially 350 squeak 2464 and also to affirm read back correct approaching Alpha 118.1.
- At 0756.06 UTC the pilot contacted Tower controller on frequency 118.1 and informed that ETH-805 is at holding point Alpha.

- Tower controller advised ETH-805 060/08 knots airborne radar 119.7 cleared to line up and take off on 07R without scanning the runway. At same moment the vehicle with call sign Red-1 was proceeding scaring for birds.
- ETH-805 aborts and vacate via delta due to car incursion.

According to the pilot report and interview, flight ETH-805 was cleared for takeoff on runway 07R by Tower controller. The crew checked the runway clearance, but because of the RWY sloppy surface, they are limited to view all the field. While accelerating the aircraft for takeoff, the captain observed the car at the middle of the runway, and they rejected the take off reaching a speed in excess before  $V_1$  135 knots, approximately 1750meters down the run way. The aircraft stopped around 100 meters from the vehicle distance.

The crew requested taxiing to clear the active runway and stopped on taxi way. After the high speed rejection, the tires of the aircraft were blown out due to high brake temperature resulting loss of wheels. There was no injury to personnel. The passengers were disembarked safely.

1, 2 **Injuries to persons**

Nil

### **1.3 Damage to Aircraft**

Because of high brake temperature fuse plug on the tires damage and also tire #1,2,5 and 6 had blown out.

### **1.4 Other damage**

There was no other damage

## **1.5 Personnel information**

### **1.5.1 Pilot-in-command:**

- Sex .....Male
- Age .....48
- CPL number..... V863
- Medical expiry day .....Nov.13/2014
- Total flight hours.....8800hrs
- On type .....4400hrs
- Hours last 90 days.....214:3hrs
- Hours last 30 days .....72:1hrs
- Hours last 7 days .....7:8hrs

### **Co-Pilot**

- Sex .....Male
- Age .....31
- CPL number.....AC-1113
- Medical expiry day .....14-09-15
- Total flight hours.....3029hrs
- On type .....958hrs
- Hours last 90 days.....257hrs
- Hours last 30 days .....69hrs
- Hours last 7 days .....15hrs

### **1.5.2 ATC information**

#### **Aerodrome controller-1**

Sex .....Male

Age.....27

Service year.....from Assistant to aerodrome 4½ years

Served as aerodrome.....Starting April 2004E.C

Qualified and license

No remark on his performance until this incident

## **Aerodrome controller -2**

Sex .....Female

Age.....28

Service year..... From Assistant to aerodrome 4½ years

Served as aerodrome..... Starting April 2004E.C

Qualified and licensed

No remark on his performance

### **1.5.3 Car deriver information**

Sex .....Male

Age.....33 years old

Work experience .....10 years

Latest qualification training.....ADP

## **1.6 Aircraft Information**

Aircraft type.....Boeing 767 – 300

Registration.....ET - AMG

Manufacture.....Being company

## **1.7 Meteorological information**

-The weather at the time was fine with a visibility more than 10km

-QNH did not work.

- wind direction and speed indicator for runway 25L did not work.

## **1.8 Navigation Aids**

Not factor

## **1.9 Communications**

- Communication between ET-AMG, flight ETH805 crews of tower controller were On frequency 118.1 MHZ

-The communication between ET-AMG flight ETH 805 crew and ground

Controller were on frequency 121.9MHZ and communication were legible in either way .

-There is an intercom link to communicate between Ground and Tower Controllers but the usual practice for years is oral communication, so that all intercom communication between Tower and Ground controllers are not recorded.

### **1.10 Aerodrome Information**

Addis Ababa Bole International airport  
Coordination .....N085828.6  
E0384712.14  
Run way orientation.....07 /25  
RWY length.....3800metres  
RWY width.....45 meters  
Elevation.....7596FT

### **1.11 Flight records**

The incident has been analyzed using communication script from the tower radio.

### **1.12 Description of incident site**

The incident took place at center of RWY 07/25

### **1.13 Medical and pathological information**

Nil

### **1.14 Fire**

Nil

### **1.15 Survival aspects**

Survivable

**1.16 Test and Research**

Nil

**1.17 Organizational and management information**

Not a factor

**1.18 Additional information**

Nil

## **2 .Analysis**

### **2.1 General**

- The Tower personnel were found properly qualified for their functions.
- At the time of the incident the tower was staffed by Aerodrome tower controller and Aerodrome ground controller on position.
- Supervisor coverage was not available during weekends and there was no supervisor assigned on the day of the incident.
- The communication consul on both frequency(121.9 &118.1mhz) between Ground. Tower & Aircraft communication were legible in either way.
- All facilities required for the provision of control services were operational.
- The crew were qualified to perform the flight in accordance with ECAA regulation .
- The aircraft has a valid certificate of airworthiness.
- Airport driver was qualified to drive bird scaring car.
- Weather was not a factor to the incident.

### **2.2 Investigation**

The analysis will discuss possible factors that resulted in an experienced controller providing a clearance simultaneously for aircraft take off and bird scaring vehicle movement on active runway. It is also considered other issues that became evident as part of the investigation.

The tower controller whose work load at that time was assessed as moderate, at 0756.06 UTC inadvertently instructed the Boeing 767 to line up and take off on runway 07R for a departure.

The tower controller stated that when he cleared the aircraft for take off, in accordance with his method of operation, he thought that the runway was cleared. He uncertainly said that Ground controller might or might not informed him the vehicle clearance to enter active runway. However, If the controllers were used the intercom , it would have been simplify the problem of communication and recorded for evidence.

According to the Ground controller report and interview that at the time of the incident she had considered that, the required coordination with the tower controller had been completed and clearances had been obtained accordingly for both ETH 805 and for birds scared vehicle to enter on the active runway. However according to Tower controller the vehicle clearance to enter active runway was not obtained by tower controller and made an argument.

When the Ground controller passes the aircraft to tower frequency 118.1, at the same time she hands over the flight progress strip for the tower controller, there for he could get little advance notice of departure and time for checking the RWY. The departure aircraft transfer from Ground controller to Tower controller usually was made at fox-trot beyond holding point, so that the tower controller as well the pilot might have little time to assimilate the flight clearance.

According to the pilot interview , the ground controller transferring procedure was un usually let almost at Alpha, approaching holding point, subsequently the tower controller gave fast clearance to line up and take off on 07R.,So that the crew did not have time to visualize the aerodrome and unable to build a picture of the situation on the taxiways and run way.

On the ATC operations manual paragraph 1:16:4.3 described that tower controller-1, before clearing an aircraft for take off shall make a visual check from the control tower to determine whether obstruction exists on take off area. If there is any obstruction in respect of which continued operation has not been authorized,

the controller shall hold or cancel the clearance until it is removed ,however this procedure did not implemented by tower controller as per standard.

On the ATC manual paragraph 1:14:1 described that an aerodrome ground controller has the final authority to issue or to withhold, for reasons of traffic permission for vehicular movement on the maneuvering area. When it is permitted, such movement shall be rigidly controlled. however this procedure did not implemented by ground controller as per standard , while issuing the aircraft to tower frequency(118.1),ground controller should strictly anticipate the movement of the vehicle.

There is a requirement for a supervisor seats on working days , but that coverage was not available during weekends and there was no supervisor assigned on the day of the incident.

The investigator pointed out that If supervisor coverage was available in the incident day, it may prevent the happenings by advising and filling the gap for the controllers.

### **2.3 Bird strike**

Prior to the incident departure aircraft pilot with call sign ETH 927 informed the tower controller about the flocks of birds movement on taxiway F between B and A. and advised to be chased. Accordingly airport birds scare vehicle driver performed the request through ground controller and found dead bird carcass on active runway near Charley. Birds concentration on or near the runway in use constitute a potential danger to aircraft on take off and landing.

Addis Ababa Bole international airport has established procedure on bird and wild life hazards management for preventing on aircraft operations, dealing with the hazards and also by assigning up to 27 bird Chasers every day .Despite these all

effort and use of different technique, bird strike problem has not been solved completely

### **3-Conclusions**

#### **3.1 Findings**

1. The radio communication between the duty Aerodrome air traffic controllers and fire brigade Vehicle (Red-1) as well as with aircraft ETH 805 was smooth.
2. Fire brigade vehicle (Red-1) given clearance to enter Fox-trot and move to alpha to scare flocks of birds on request from tower, that advised the birds movement information from ETH 927 flight departed earlier,
3. The ground controller instructed Red-1 to check the active runway 07R and to proceed to the end of RWY 25. Red-1 vehicle acknowledged.
4. The instruction to Red-1 and issuing clearance which was given to ETH 805 accordingly by ground controller were as per the Standard. But she did not rigidly controlled.
5. Coordination between aerodrome controller and ground controlled was smooth, however, there was a disagreement between the aerodrome controllers on vehicle(Red-1) entering runway 07R.
6. ETH 805 was given clearance for line up and take off from RWY 07R – with out visual scanning of the runway.
7. At the time of the incident the traffic movement was medium and the weather was clear.

8. ETH 805 aborted take off after rolling from 07R due to a vehicle on the runway center moving towards runway 25 and avoided risk of collision.
9. No duty supervisor was assigned to assist and give relief to the Controllers.

### **Other finding**

1. At the time of the incident QNH and wind direction and speed indicator for runway 25L did not work.
2. Addis Ababa Bole international airport has established procedure on bird/wild life management for preventing birds hazard, however bird strike problem has not been solved completely.

### **3.2 Cause of the incident.**

The Investigation committee determines that the probable cause of the incident was human error, in that tower controller inadvertently cleared ETH. 805 for take off before he had cleared Airport service vehicle from runway. And he didn't check the runway before he issue takeoff clearance.

### **3.3 Contributing factors**

- . Ground controller an inadequate support for the tower controller.
- . Concentrated bird movement around and near the aerodrome field.

### **4. Recommendations**

In order avoid to the recurrence of such incidents recommendation are suggested

1. ATS should conduct refreshment /recurrent training program
2. Human factors in ATS training should be given
3. Supervisor is mandatory at all times.

4. Bale International Airport shall improve birds and wild life hazards management to prevent bird strike.
5. Airport may establish radio frequency(118.1) for vehicles which enter on active RWY on purposes only to listen and recognize an aircraft movement.