



AIRCRAFT ACCIDENT REPORT

NAHCO-AERO/2014/04/29/F

Accident Investigation Bureau

**Report on the Serious Incident involving a NAHCO
Aviance Baggage Loader Vehicle Fleet No. L3-23 and a
parked Bombardier DHC-8-400 aircraft belonging to Aero
Contractors with registration 5N-BPT which occurred at
Aero Ramp, MMA, Lagos State
on the 29th of April, 2014**

This report was produced by the Accident Investigation Bureau, Murtala Muhammed International Airport, Ikeja, Lagos.

The report is based upon the investigation carried out by the Accident Investigation Bureau, in accordance with Annex 13 to the Convention on International Civil Aviation, Nigerian Civil Aviation Act 2006, and Civil Aviation (Investigation of Air Accidents and Incidents) Regulations.

In accordance with Annex 13 to the Convention on International Civil Aviation, it is not the purpose of Aircraft Accident/Serious Incident Investigations to apportion blame or liability.

Readers are advised that Accident Investigation Bureau investigates for the sole purpose of enhancing aviation safety. Consequently, Accident Investigation Bureau reports are confined to matters of safety significance and should not be used for any other purpose.

As the Bureau believes that safety information is of great value if it is passed on for use of others, readers are encouraged to copy or reprint for further distribution, acknowledging Accident Investigation Bureau as the source.

Recommendations in this report are addressed to the Regulatory Authority of the State (NCAA). It is for this authority to ensure enforcement.

©Accident Investigation Bureau, Nigeria, 2018.

TABLE OF CONTENTS

TABLE OF CONTENTS	i
TABLE OF FIGURES	ii
GLOSSARY OF ABBREVIATIONS USED IN THIS REPORT	1
SYNOPSIS	3
1.0 FACTUAL INFORMATION.....	5
1.1 History of the Flight	5
1.2 Injuries to Persons.....	5
1.3 Damage to Aircraft	6
1.4 Other Damage.....	6
1.5 Personnel Information.....	6
1.5.1 Pilot In-Command	6
1.5.2 Co-Pilot	7
1.5.3 Equipment Operator (Driver)	8
1.6 Aircraft Information	9
1.6.1 Aircraft Data	9
1.6.2 Engines	10
1.6.3 Baggage Loader Vehicle	11
1.7 Meteorological Information.....	11
1.8 Aids to Navigation.....	11
1.9 Communications	11
1.10 Aerodrome Information.....	12
1.11 Flight Recorders	12
1.12 Wreckage and Impact Information.....	12
1.13 Medical and Pathological Information.....	16
1.14 Fire.....	16

1.15	Survival Aspects	16
1.16	Test and Research	16
1.17	Organizational and Management Information	17
1.17.1	Aero Contractors Nigeria Limited	17
1.17.2	NAHCO Aviance.....	17
1.17.3	Federal Airports Authority of Nigeria (FAAN)	19
1.18	Additional Information	21
1.19	Useful or Effective Investigation Techniques.....	21
2.0	ANALYSIS	22
2.1	NAHCO Baggage Loader Vehicle	22
2.2	Equipment Operator	22
2.3	NAHCO Management supervision - Responsibilities	22
3.0	CONCLUSIONS	24
3.1	Findings	24
3.2	Causal Factor	25
3.3	Contributory Factor	25
4.0	SAFETY RECOMMENDATIONS	26
	RESPONSES TO SAFETY RECOMMENDATIONS.....	27
	APPENDIX	28

TABLE OF FIGURES

Figure 1: Parked Aero Contractors DHC-8-400 aircraft (5N-BPT)	10
Figure 2: Damage to lower aft section of the aircraft.....	13
Figure 3: Damage to the lower section to the fuselage's cargo compartment.....	13

Figure 4: The position of the Baggage Loader Vehicle after the incident (a distance of about 110ft from the incident aircraft).....14

Figure 5: The damaged steering wheel of the baggage loader vehicle15

Figure 6: The damage to the steering and seat of the baggage loader vehicle15



GLOSSARY OF ABBREVIATIONS USED IN THIS REPORT

ACN	Aircraft Classification Number
ADA	Authority to Drive on Airside
AIB	Accident Investigation Bureau
AMP	Approved Maintenance Programme
AMSL	Above Mean Sea Level
ATPL	Airline Transport Pilot Licence
AVCM	Airside Vehicle Control Manual
CB	Cloud Broken
CBs	Cumulonimbus Clouds
CPL	Commercial Pilot Licence
CRM	Crew Resource Management
CT	Control Tower
DME	Distance Measuring Equipment
FAAN	Federal Airports Authority of Nigeria
GAT	General Aviation Terminal
GPS	Global Positioning System
ICAO	International Civil Aviation Organisation
IFR	Instrument Flight Rules

ILS	Instrument Landing System
NAHCO	Nigerian Aviation Handling Company Limited
NAMA	Nigeria Airspace Management Agency
NAVAIDS	Navigational Aids
NCAA	Nigerian Civil Aviation Authority
NDB	Non Directional Beacon
Nig.CARs	Nigerian Civil Aviation Regulations
NIMET	Nigerian Meteorological Agency
SOP	Standard Operating Procedure
UTC	Universal Coordinated Time
QNH	Altimeter Setting that Causes Altimeter to Indicate Altitude above Sea Level
VOR	Very High Frequency Omni-Directional Radio Range

5N-BPT/ Fleet No. L3-23

Aircraft Accident Report No.:	NAHCO-AERO/2014/04/29/F
Registered Owners:	Aero Contractors Nigeria Limited and NAHCO Aviance
Operators:	Aero Contractors Nigeria Limited and NAHCO Aviance
Models:	DHC-8-400 / TUG 660-241
Manufacturers:	Bombardier/Stewards & Stewards TUG 660
Dates of Manufacture:	2003/ 2007
Registration Number:	5N-BPT (Aircraft)/ Vehicle Fleet No. L3-23 (Baggage Loader)
Serial Numbers:	4078/ 8791
Location:	MMA (AERO RAMP), Lagos.
Date and Time:	29 th April 2014 @ 0640hrs

All times in this report are local time (equivalent to UTC+1) unless otherwise stated.

SYNOPSIS

The Accident Investigation Bureau (AIB) was notified by a passenger of the incident on Tuesday 29th April, 2014 at about 0715hrs. Investigators were dispatched to the incident site at Aero Ramp, Murtala Mohammed Airport (MMA) General Aviation Terminal (GAT), Ikeja Lagos. All relevant authorities were notified.

On the 29th April, 2014 at about 0640hrs, an Aero Contractors aircraft with registration number 5N-BPT was positioned for flight. While passengers were boarding, a NAHCO Aviance Baggage Loader vehicle with Fleet No. L3-23 driven by a NAHCO personnel rammed into the pressurized area of the lower fuselage section of the cargo compartment on the port side of the aircraft, damaging it and the baggage loader vehicle.

There was no fatality but the unauthorised driver of the baggage loader vehicle sustained serious injuries that resulted in his loss of consciousness and control of the vehicle. The vehicle later stopped at a distance of about 110ft from the incident aircraft. The driver was moved to a private hospital near the airport for initial treatment. Arrangement was made with the hospital for a detailed medical and toxicological examination.

This incident occurred in daylight.

The investigation identified the following causal and contributory factors:

Causal Factor

The NAHCO personnel who operated the baggage loader vehicle was neither employed to operate the vehicle, nor was he authorized to do so.

Contributory Factor

1. The rostered driver of the baggage loader vehicle was not available at the time of the occurrence.
2. The non-adherence to NAHCO Safe Operating Procedures by the Ramp manager.

Four Safety Recommendations were made.

1.0 FACTUAL INFORMATION

1.1 History of the Flight

On April 29th, 2014 at about 0640hrs, an aircraft, a Bombardier DHC-8-400 with Registration No. 5N-BPT belonging to Aero Contractors Nigeria Limited was positioned for flight on the Aero Ramp at Murtala Muhammed Airport (MMA), General Aviation Terminal (GAT). The Aircraft was scheduled for LOS-KAD flight.

As passengers were boarding the aircraft, a NAHCO Aviance baggage loader vehicle with Fleet No. L3-23 driven by its personnel, while positioning for the loading of baggage unto the aircraft, rammed through the pressurized area of the lower fuselage section of the cargo compartment on the port side of the aircraft, damaging its skin, stringers and the baggage loader vehicle. The vehicle stopped at a distance of about 110ft from the incident aircraft.

There was no fatality but the personnel who drove the baggage loader sustained serious injuries from the impact resulting in the loss of consciousness. He was taken to a private hospital near the airport for first aid and further medical and toxicological examinations.

1.2 Injuries to Persons

Injuries	Crew	Passengers	Others
Fatal	Nil	Nil	Nil
Serious	Nil	Nil	1
Minor/None	Nil	Nil	Nil

1.3 Damage to Aircraft


The aircraft was substantially damaged.

1.4 Other Damage

The baggage loader vehicle was substantially damaged.

1.5 Personnel Information

1.5.1 Pilot In-Command

A large, semi-transparent watermark is centered on the page. It consists of a circular arrow pointing clockwise, with the text 'ACCIDENT INVESTIGATION BUREAU' written around the perimeter. In the center of the circle is the Nigerian coat of arms, which features two white horses flanking a shield with a red eagle and a white cross. Below the shield is a banner with the text 'FIDELITY BRAVERY INTEGRITY'. The letters 'AIB' are written in large, bold, orange letters across the center of the watermark.

Nationality: Nigerian
Gender: Male
Age: 55 years
Licence No.: ATPL 3219
Licence Validity: 14th May 2017
Aircraft Ratings: B737-300, -500, DHC-8
Instrument Rating Validity: 11th March 2015
Proficiency/ Recurrent Checks: 11th September 2014
Medical Validity: 3rd May 2014
Total Flying Experience: 19,915.05hrs
On Type: 439.55hrs

5N-BPT/ Fleet No. L3-23

Last 90 days:	205.25hrs
Last 28 days:	67.30hrs
Last 24 hours:	4.30hrs

1.5.2 Co-Pilot

Nationality:	Nigerian
Age:	41 years
Gender:	Male
Licence No.:	CPL 5632
Licence Validity:	19 th March, 2018
Aircraft Rating:	B737-300, B737-500, DHC-8
Instrument Rating Validity:	21 st November, 2014
Proficiency/Recurrent Checks:	21 st May, 2014
Medical Validity:	19 th June, 2014
Total Flying Experience:	266.30hrs
On Type:	12.30hrs
Last 90 days:	12.30hrs
Last 28 days:	12.30hrs
Last 24 hours:	4.30hrs

1.5.3 Equipment Operator (Driver)

Age:	35 years
Gender:	Male
Nationality:	Nigerian
Driver's Licence No.:	Nil
Authority to Drive on Airside (ADA):	Nil
Equipment Handler licence:	Nil
Airside Permit:	Nil

The NAHCO personnel who drove the baggage loader vehicle joined NAHCO on 9th November, 2009 as Flight Service Officer II (Load Controller). He has also attended the following courses on the job:

- Aviation Security Awareness.
- Weight and Balance (Load Control).
- Ramp Safety.
- IATA Dangerous Goods Regulations (CAT 10).
- Supervising Aircraft Loading.

He had worked with Armour Group of Companies (UK) as a Control Officer and Bodsons Nigeria Limited after graduation, before joining NAHCO.

He was not assigned to drive the vehicle and had previously been involved in a similar incident on the 20th April, 2014.

5N-BPT/ Fleet No. L3-23

1.6 Aircraft Information

1.6.1 Aircraft Data

Registration Marks:	5N-BPT
Manufacturer :	Bombardier
Type:	DHC-8 Q400
Registered Owner:	Aero Contractors Nig. Ltd
Operator:	Aero Contractors Nig. Ltd
Certificate of Airworthiness:	Issued 6 th August 2013
Certificate of Registration:	22 nd October 2013
Insurance Validity:	30 th June 2014
Serial No.:	4078
Year of Manufacture:	2003
Total Airframe Time:	19,862.31 hrs
Cycles Since New:	N/A

The aircraft was serviceable at the time of the incident.

5N-BPT/ Fleet No. L3-23



Figure 1: Parked Aero Contractors DHC-8-400 aircraft (5N-BPT)

1.6.2 Engines

	No. 1	No. 2
Manufacturer:	Pratt & Whitney	Pratt & Whitney
Type:	PW 150A	PW150A
Year of Manufacture:	2003	2003
Serial No.:	PCE-FA0200	PCE-FA0195
TSN/CSN:	17344:05/19893	18711:05/21552
Type of Fuel:	Jet A1	Jet A1

1.6.3 Baggage Loader Vehicle

Type:	Baggage Loader
Registration Number:	L3-23
Model:	TUG 660-241
Manufacturer :	Stewards & Stewards TUG 660
Year of manufacture:	08/2007
Owner /Operator:	Nigerian Aviation Handling Company (NAHCO)

1.7 Meteorological Information

The incident occurred in daylight.

1.8 Aids to Navigation

Not applicable.

1.9 Communications

Ground Control frequency 121.9MHz was in use for start-up clearance while Control Tower frequency 118.1MHz was available to all airside vehicles for two-way communications.

1.10 Aerodrome Information

The MMA has two dual bi-directional runways - RWY 18L/36R, 9006ft (2745m) and 18R/36L, 12,795ft (3900m). It is located on an Elevation of 135ft with a Coordinate of N06° 34'43.1298", E03° 19'.12'.

There are two VORs and one NDB stations in MMA Lagos. One is aligned with the centreline of the RWY 18L (113.7MHz LAG), NDB is also available on this runway (336MHz LA), while the second VOR is aligned with the centreline of RWY 36L (112.9MHz LOS). There are also two ILS/DME installed on RWY 18L (110.3MHz ILA) and 18R (108.1MHz ILB) respectively. The runway surfaces are asphalt coated. The ICAO designated Code is DNMM/LOS.

1.11 Flight Recorders

Not Applicable.

1.12 Wreckage and Impact Information

The aircraft sustained damage at the pressurized area of the lower fuselage section of the cargo compartment, which affected the skin and stringers. The baggage loader vehicle steering wheel and seat were damaged from the impact. The incidence occurred at the Aero ramp and the vehicle stopped at a distance of 110ft from the aircraft. See figures 3, 4, 5 and 6.

5N-BPT/ Fleet No. L3-23



Figure 2: Damage to lower aft section of the aircraft



Figure 3: Damage to the lower section to the fuselage's cargo compartment

5N-BPT/ Fleet No. L3-23



Figure 4: The position of the Baggage Loader Vehicle after the incident (a distance of about 110ft from the incident aircraft)

5N-BPT/ Fleet No. L3-23



Figure 5: The damaged steering wheel of the baggage loader vehicle



Figure 6: The damage to the steering and seat of the baggage loader vehicle

1.13 Medical and Pathological Information

The NAHCO personnel who drove the baggage loader vehicle was taken to NAHCO company authorised hospital after the incident for tests. The results of the toxicological tests for drugs, alcohol and any substance of abuse were reported negative.

1.14 Fire

There was no fire outbreak.

1.15 Survival Aspects

There were no injuries to the crew but the personnel who drove the baggage loader vehicle lost consciousness following the impact. However, he was rescued and rushed to the nearby NAHCO Company authorised Hospital by his colleagues and other personnel at the ramp. He later regained consciousness due to the prompt medical attention given to him.

1.16 Test and Research

Nil.

1.17 Organizational and Management Information

1.17.1 Aero Contractors Nigeria Limited

Aero Contractors Nigeria Limited is a registered Airline Operator and is engaged in scheduled and charter air transportation of passenger conveyance and cargo. Its operational base is MMA G.A.T, Ikeja, Lagos.

Aero Contractors' Company of Nigeria (ACN) was incorporated in 1959 and operates both Rotary and Fixed wing services. ACN provide fixed wing passengers services to various Nigeria domestic airports and international destinations in the West African sub-region.

Aero Contractors is an Approved Maintenance Organisation (AMO) with limited ratings. Major checks on DHC-8 are carried out by SAMCO AIRCRAFT MAINTENANCE at Maastricht, the Netherlands.

1.17.2 NAHCO Aviance

The NAHCO Aviance is a registered Aviation Handling Company located at the Murtala Muhammed Airport, Ikeja, Lagos. It is involved in both cargo and passenger handling for many airlines within most Nigerian airports.

At the time of the incident, the Baggage Loader Vehicle was reported to be serviceable according to the maintenance work-sheet submitted to the Bureau.

The brakes were functional at the time of the incident and this was confirmed by physical checks carried out by the assigned NAHCO driver after the incident.

NAHCO duty schedule for Flight Services Officers II (Load Controller) is detailed in the S.O.P section 1.10.3 viz:

- *Receive and store on-hand baggage in the airlines racks/ cargo compartments.*
- *Completing missing, damage and pilfering report, follow-up same in the world tracer system where applicable.*
- *Release on-hand baggage to owner in accordance with the baggage release procedures.*
- *Comply with standard operating procedures and safe operating practice (S.O.P section 2.8.1).*

1.17.2.1 NAHCO Aviance S.O.P Section 2.3.6 (Duties and Responsibilities of Equipment Operatives)

The vehicle types operated in the ramp/ airside include: baggage loader, aircraft pushback and towing, passenger steps/ catering etc. Details of their operations are contained in NAHCO S.O.P section 2.8.1 and 2.8.2.

The responsibilities and functions of the senior equipment operatives include- the following:

Perform leadership role for the unit, daily equipment testing and serviceability, technical checks of procured equipment and supervision of smooth operations.

1.17.2.2 NAHCO AVIANCE S.O.P section 2.8 (Safe Operating Practices)

The ramp manager shall be responsible for the implementation of all NAHCO safe operating practices in the ramp. All staff operating on the ramp must be:

- *Properly briefed of his roles and responsibilities before commencement of operations.*
- *Stay clearly away from all hazard zones.*
- *Ensure all scheduled staff are in their assigned work areas.*
- *Extreme care is taken in operation of all equipment while moving to position around the aircraft.*
- *Equipment moving towards the aircraft must not be driven faster than a walking speed.*

1.17.3 Federal Airports Authority of Nigeria (FAAN)

FAAN as operator of airport controls the entry to and from the airside, as well as the activities of all surface vehicles on airside.

Procedures for the control of vehicles operating on the airside at Murtala Muhammed Airport are contained in the Airside Vehicle Control Manual (AVCM). This is issued by Federal Airports Authority of Nigeria (FAAN) as a separate document to those organizations and persons who need to operate vehicles at airside on a frequent basis and without escort.

The AVCM and its attachments detail the FAAN requirements and obligations in respect to vehicular activities on the airside.

The Murtala Muhammed Airport "Airside Vehicle Control Manual" (AVCM) has been produced as a MMIA management document, to control vehicle operations on the airside.

The AVCM for drivers operating on Airside includes details of radio procedures to be used for certain categories of airside driving. The document itself is produced as a separate handbook for issuance to all airside drivers

Additionally, because the airport is subject to Air Traffic Control, vehicles are permitted on the maneuvering area of the airport (i.e. on taxiways and runways) only when specifically approved (given a clearance) by ATC. Furthermore, all drivers operating vehicles on a runway must turn their mobile phones off before entering the runway.

In exercising control of vehicles and drivers, MMIA has instituted procedures that involve Airfield Services Officers whose responsibilities include:

- Assessing the need for individual vehicles and drivers to operate on airside without escort.*
- Checking and approving the use of particular vehicles on airside.*
- Training, testing and authorizing individual drivers to drive on airside.*

The procedure for the approval for a driver to operate a vehicle on airside and the issuing of a FAAN "Authority to Drive on Airside" (ADA) is contained in the Airside Vehicle Control Manual (AVCM). ADA may be issued following satisfactory training and testing in one of four categories, namely:

<i>ADA Category 1</i>	<i>Perimeter Roads</i>
<i>ADA Category 2</i>	<i>ADA Category 1 plus Taxiways</i>
<i>ADA Category 3</i>	<i>ADA Category 2 plus Aprons</i>
<i>ADA Category 4</i>	<i>ADA Category 3 plus Runways</i>

1.18 Additional Information

Nil.

1.19 Useful or Effective Investigation Techniques

Nil.



2.0 ANALYSIS

2.1 NAHCO Baggage Loader Vehicle

According to the Plant/Vehicle Record of fleet No. L3-23, the baggage loader vehicle was serviceable when it was being positioned for operation at the time of the incident.

2.2 Equipment Operator

NAHCO personnel that drove baggage loader vehicle was employed as a Flight Services Officer II (Load Controller) and his duties are as detailed in the NAHCO S.O.P section 1.10.3. His duties do not include operating any equipment on the ramp.

The procedure for entry to and from the airside and the activities of all surface vehicles on the airside and ramp is contained in the FAAN Airside Vehicle Control Manual (AVCM). This is issued by Federal Airports Authority of Nigeria (FAAN) as a separate document to those organizations and persons who need to operate vehicles at airside on a frequent basis and without escort. The AVCM and its attachments detail the FAAN requirements and obligations in respect to vehicular activities on the airside.

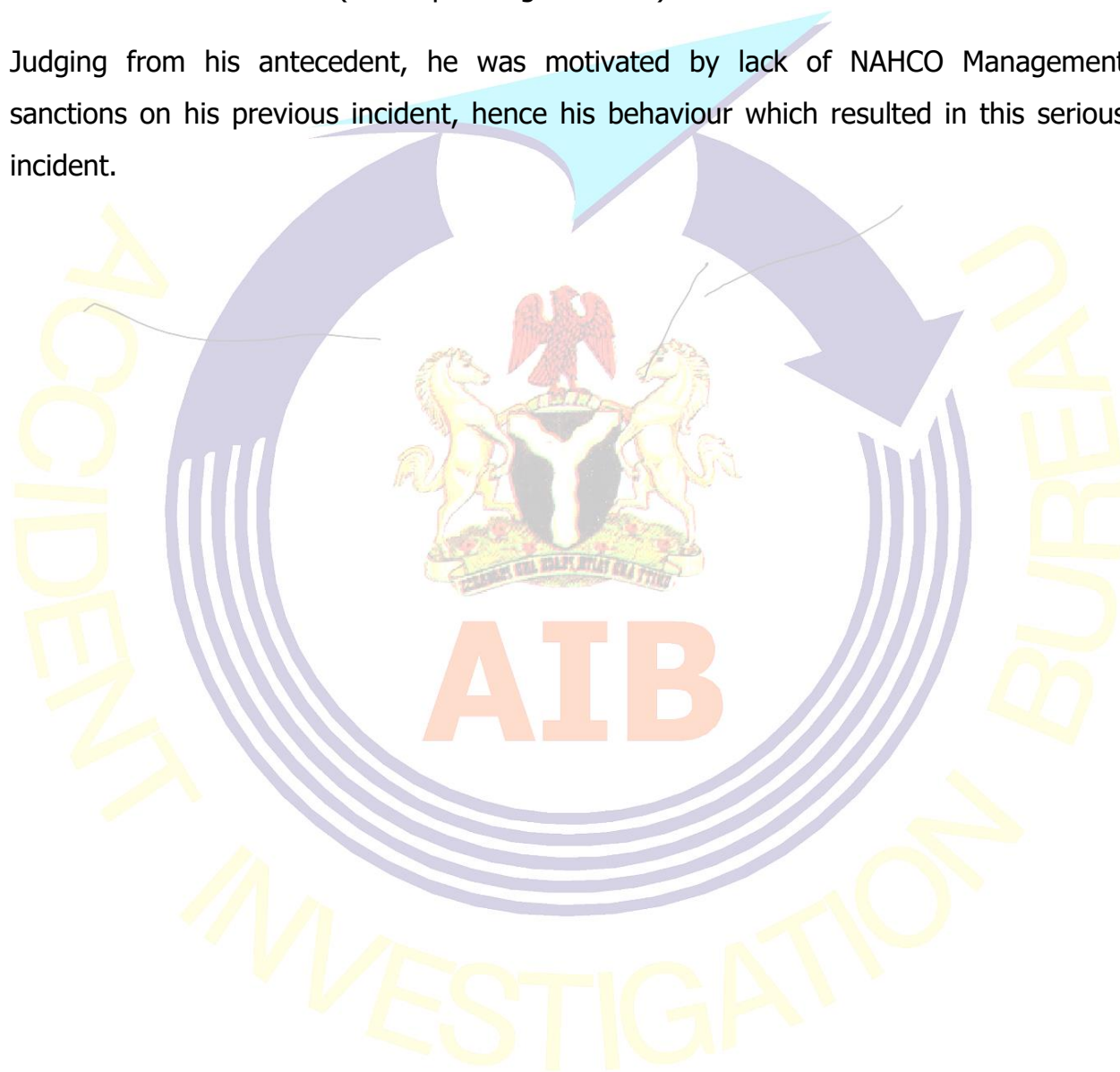
The personnel was neither trained nor assigned as an equipment driver in accordance with NAHCO Aviance S.O.P section 2.3.6 (Duties and responsibilities of Equipment Operatives) and does not possess Authority to Drive on Airside (ADA) permit.

2.3 NAHCO Management Supervision - Responsibilities

The personnel who drove the baggage loader vehicle did not comply with the NAHCO responsibility requirement and was not effectively supervised accordingly. He did not adhere to the NAHCO S.O.P section 2.8 (Safe Operating Practices).

The personnel operated outside his job specification by carrying out a function that was not assigned to him which resulted in the serious incident. The incident would have been averted if there was effective supervision on the personnel in accordance with NAHCO S.O.P section 2.8 (Safe Operating Practices).

Judging from his antecedent, he was motivated by lack of NAHCO Management sanctions on his previous incident, hence his behaviour which resulted in this serious incident.



3.0 CONCLUSIONS

3.1 Findings

The investigation revealed the following:

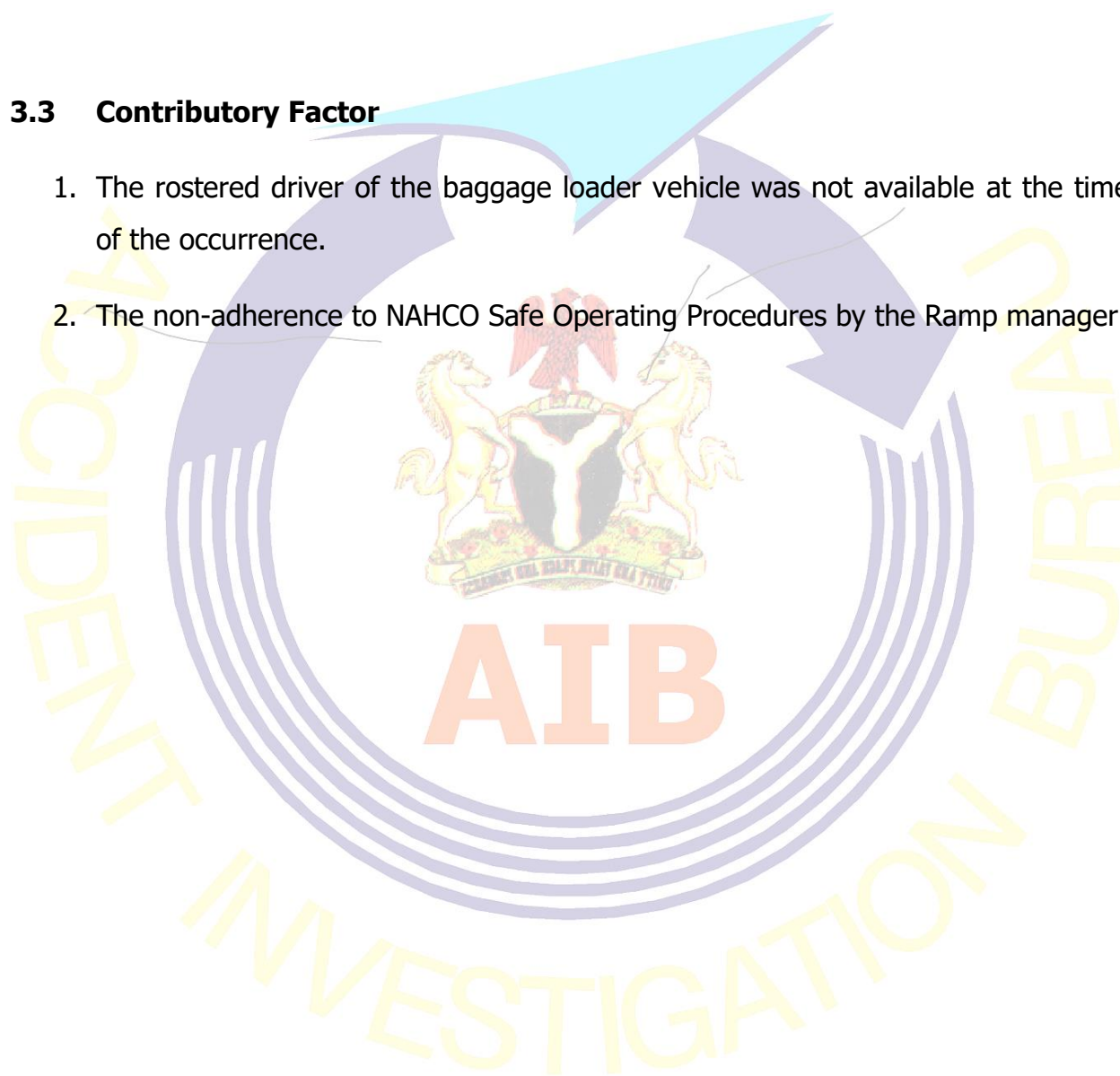
1. The aircraft was parked at Aero Ramp, General Aviation Terminal, MMA.
2. The aircraft was scheduled to operate Lagos – Kaduna flight.
3. Passengers were boarding when the incident occurred.
4. The NAHCO personnel who drove the baggage loader vehicle was neither employed as a driver, nor was he assigned to drive the vehicle.
5. The NAHCO personnel was employed as a Flight Services Officer II (Load Controller).
6. The aircraft sustained damage at the pressurized area of the lower fuselage section of the cargo compartment, which affected the skin and stringers.
7. The NAHCO personnel lost consciousness and control of the vehicle as a result of impact with the aircraft.
8. The baggage loader vehicle steering wheel and seat were damaged from the impact.
9. The result of toxicological examinations carried out on the NAHCO personnel was reported negative.

3.2 Causal Factor

The NAHCO personnel who operated the baggage loader vehicle was neither employed nor authorized to do so.

3.3 Contributory Factor

1. The rostered driver of the baggage loader vehicle was not available at the time of the occurrence.
2. The non-adherence to NAHCO Safe Operating Procedures by the Ramp manager.



4.0 SAFETY RECOMMENDATIONS

4.1 Safety Recommendation 2017-028

NAHCO Aviance should ensure strict adherence to its Standard Operating Procedures.

4.2 Safety Recommendation 2017-029

The AOC holder should determine the minimum number of personnel/equipment for airline ground handling operations to be deployed for each aircraft type.

4.3 Safety Recommendation 2017-030

NCAA should ensure operators provide checklist/ SOP on each equipment/vehicle assigned to each aircraft type. The SOP should list the minimum number of personnel required for each equipment/vehicle, driver/loaders and any other personnel and the skills required for the handling of the ground equipment.

4.4 Safety Recommendation 2017-031

NCAA should ensure ground handling operators make provision in their safety management programme to report any breaches of safety management programme that result to serious incidences to responsible authorities.


RESPONSES TO SAFETY RECOMMENDATIONS

NCAA Response on AIB Safety Recommendations

NCAA responded to Safety Recommendation 4.4 (2017-031) as follows:

NCAA partially agrees with this Safety Recommendation. ICAO Annex 19 and the Nig. CARs Part 20 (20.2.1.3) on Safety Management did not include Ground Handling Operators as one of the service providers that are required to implement Safety Management System (SMS). It is the responsibility of the AOC Holder to ensure that its sub-contractors develop and implement a satisfactory SMS. However, NCAA assesses and accepts the SMS of Ground Handling Companies, including reporting procedures to the appropriate Authorities.




NIGERIAN AVIATION HANDLING CO. PLC.
PLANT/VEHICLE RECORD

FLEET NO. 13-23 MAKE STEWARD'S F MODEL 660-134 UNIT SERIAL NO. 8791
 ENGINE NO. ENGINE TYPE TRANSPORT TYPE
 SUPPLIER YEAR OF MANUFACTURE 08/07 COST DATE COMMISSIONED

DATE	DETAIL OF WORK DONE	JOB CARD NO.	COST OF REPAIR	TOTAL COST TO DATE	COST CLERK SIGNATURE
14	Major service done @ 4412.1 hrs. oil filter fuel filter and air filter				
14	More renewed water separator changed. 14 litres of engine oil used.				
14	Replaced 1 main tyre 7.00 x 16				



5N-BPT/ Fleet No. L3-23

L3-23

DETAIL OF WORK DONE	JOB CARD NO.	COST OF REPAIR	TOTAL COST TO DATE	COST CLERK SIGNATURE	REMARKS
2 Major Service Done @ 02:54 hrs. 14 lbs of oil used. Filters were changed. Replaced damaged accelerator cable with new one. Start.	8/6/14		Fuel & oil		
Major Serv done @ 23:22 hrs. all serv filters renewed. 14 lbs of oil used; cleaned all nipples & stem washed jet nozzles, etc.					
2 Topped 1/2 tin of brake fluid.					
2 Topped 1 litre of engine oil.					
Major Serv done @ 02:00 hrs; only oil and air filters were renewed; 14 lbs of engine oil used.					
Major Serv done @ 28:25 hrs. oil and air filters replaced. 14 lbs of engine oil used.					
While 1.5 litres of ATF topped.					
2 0-13					
Major Serv @ 31:56 hrs; all serv filters were renewed; 14 lbs of engine oil & 10 lbs of ATF were also used.					
Topped 2 lbs of engine oil.					
Major Serv done @ 03:12 hrs; only oil & fuel filters were renewed; used 14 lbs of engine oil.					
Vulcanized 1 tyre 7.00 x 16					
Major Serv done @ 03:16 hrs. renewed all serv filters; used 14 lbs of engine oil; greased nipples.					
Fixed 1 new tyre & tube 7.00 x 16					
Topped brake fluid.					
2014					
Major Serv @ 04:02 hrs; used 14 lbs of engine oil; renewed serv filters; topped 1 tin of brake fluid.					
Topped 15 lbs of hydraulic oil; also lifting cylinder to leaking.					
Replaced 1 tyre & tube 7.00 x 16					



NIGERIAN AVIATION HANDLING CO. PLC.

PLANT/VEHICLE RECORD

MECH


LEET NO L3-23 MAKE TUG 660 TYPE BELT LOADER MODEL 660-241 UNIT SERIAL NO 8791

ENGINE NO _____ ENGINE TYPE _____ TRANS TYPE _____ DRIVE AXLE TYPE _____

UPPLIER _____ YEAR OF MANUFACTURE 08/07 COST _____ DATE COMMISSIONED _____

E	DETAIL OF WORK DONE	JOB CARD NO.	COST OF REPAIR	TOTAL COST TO DATE	COST CLERK SIGNATURE	REMARKS
1	Replacement of throttle cable with a new one					
11	Topped with lube oil					
11	Major service was done @ 01/15/14. 14 litres of oil was used. Oil fuel & air filters were replaced with new ones from store. The air filter was replaced with a new one from store.					
1	Major service done @ 01/17/14. Fuel oil & fuel water separator filter were replaced with new ones. No replacement for air filter. 14 litres of oil was used for the service.					
1	Acceleration problem was rectified.					
	2012					
1	Tried the brake fluid.					
1	Major service was done @ 01/24/14. 14 litres of oil was used. All servicing parts were available and replaced with new ones. Ground & steam cleaned. Fuel topped and ATF with 1 litre only.					
1	Replacement of 1 new type of tyre (20x16) type 2 liter of oil					

NAHCO: 07612-08



NIGERIAN AVIATION HANDLING CO. LTD.
PLANT/VEHICLE RECORD

ISSUED BY: 13-23 MAKE: TUG 660 TYPE: BEET LORRAINE MODEL: 660-24 UNIT SERIAL NO: 8791

ENGINE NO: _____ ENGINE TYPE: _____

APPLIER: _____ YEAR OF MANUFACTURE: 08/07 COST: _____

TRANS TYPE: _____ DRIVE AXLE TYPE: _____

DATE COMMISSIONED: _____

DETAIL OF WORK DONE	JOB CARD NO.	COST OF REPAIR	TOTAL COST TO DATE	COST CLERK SIGNATURE	REMARKS
1. Topped with brake fluid.					
2. Topped with brake fluid.					
3. Brake fluid shortage. Advised to be brought to the workshop for refilling.					
4. Brake fluid shortage. Advised to be brought to the workshop for refilling.					
5. Replacement of one new tyre (200x16).					
6. Topped with brake fluid.					
7. Replacement of one new tyre (200x16).					
8. Replaced the front wheel (200x16).					
9. Replaced the front wheel (200x16).					
10. Replaced the front wheel (200x16).					
11. Replaced the front wheel (200x16).					
12. Replaced the front wheel (200x16).					
13. Replaced the front wheel (200x16).					
14. Replaced the front wheel (200x16).					
15. Replaced the front wheel (200x16).					
16. Replaced the front wheel (200x16).					
17. Replaced the front wheel (200x16).					
18. Replaced the front wheel (200x16).					
19. Replaced the front wheel (200x16).					
20. Replaced the front wheel (200x16).					

MAHCO: 076/2-08

DETAIL OF WORK DONE	JOB CARD NO.	COST OF REPAIR	TOTAL COST TO DATE	COST CLERK SIGNATURE	REMARKS
Removal of starter motor from L3-36 w/d to make it serviceable.					
Bid Thistle cable replaced from L3-20 to make it serviceable.					
Replacement of one bad tube (700x16).					
Replacement of one new tube & filter on valve (195"x16).					
Replaced one of its type onto a new one.					
Optical refilled battery terminal.					
Topped left brake fluid.					
Replacement of one gas tube (700x16) - topped with 1 litre of engine oil -					
Major Service. 14 litres of Engine oil was topped. Both fluid was oil/m topped					
③ 271 parts. All angles was greased. no oil & fuel filters in the case. Air filter was cleaned.					
Repacked with brake fluid.					
Replaced 9 broken timing cam.					
Removal of broken steering wheel arm.					
Replacement of handle.					
Installation of new horn.					
Major Service done @ 65% load. 14 litres of E/M oil was used. The air filter, fuel filter and carbon separator filter were replaced with new ones.					
Replacement of faulty headlamp.					
Replacement of 2 new tyres & tube (700x16)					
Major Service done @ 60% load. 14 litres of E/M oil used. no air filter had the oil.					
One was cleaned & work ball - (greasing action) and the mechanism was generally cleaned.					



NIGERIAN AVIATION HANDLING CO. PLC. PLANT/VEHICLE RECORD

LEET NO 13-23 MAKE YAG 660 TYPE BELT LOADER MODEL 660-241 UNIT SERIAL NO 8991

ENGINE NO _____ ENGINE TYPE _____ TRANS TYPE _____ DRIVE AXLE TYPE _____

UPPLIER _____ YEAR OF MANUFACTURE 08/07 COST _____ DATE COMMISSIONED _____

DETAIL OF WORK DONE	JOB CARD NO.	COST OF REPAIR	TOTAL COST TO DATE	COST CLERK SIGNATURE	REMARKS
1. Top 20% brake fluid.					
2. Top 20% brake fluid.					
3. Brake fluid shortage. Advised to be brought to the workshop for re-filling.					
4. Brake fluid shortage. Advised to be brought to the workshop for re-filling.					
5. Replacement of one new tyre (200x16).					
6. Top 20% brake fluid.					
7. Replacement of one new tyre (200x16).					
8. Replacing of one new tyre (200x16).					
9. Replacing of one new tyre (200x16).					
10. Replacing of one new tyre (200x16).					
11. Replacing of one new tyre (200x16).					
12. Replacing of one new tyre (200x16).					
13. Replacing of one new tyre (200x16).					
14. Replacing of one new tyre (200x16).					
15. Replacing of one new tyre (200x16).					
16. Replacing of one new tyre (200x16).					
17. Replacing of one new tyre (200x16).					
18. Replacing of one new tyre (200x16).					
19. Replacing of one new tyre (200x16).					
20. Replacing of one new tyre (200x16).					
21. Replacing of one new tyre (200x16).					
22. Replacing of one new tyre (200x16).					
23. Replacing of one new tyre (200x16).					
24. Replacing of one new tyre (200x16).					
25. Replacing of one new tyre (200x16).					
26. Replacing of one new tyre (200x16).					
27. Replacing of one new tyre (200x16).					
28. Replacing of one new tyre (200x16).					
29. Replacing of one new tyre (200x16).					
30. Replacing of one new tyre (200x16).					
31. Replacing of one new tyre (200x16).					
32. Replacing of one new tyre (200x16).					
33. Replacing of one new tyre (200x16).					
34. Replacing of one new tyre (200x16).					
35. Replacing of one new tyre (200x16).					
36. Replacing of one new tyre (200x16).					
37. Replacing of one new tyre (200x16).					
38. Replacing of one new tyre (200x16).					
39. Replacing of one new tyre (200x16).					
40. Replacing of one new tyre (200x16).					
41. Replacing of one new tyre (200x16).					
42. Replacing of one new tyre (200x16).					
43. Replacing of one new tyre (200x16).					
44. Replacing of one new tyre (200x16).					
45. Replacing of one new tyre (200x16).					
46. Replacing of one new tyre (200x16).					
47. Replacing of one new tyre (200x16).					
48. Replacing of one new tyre (200x16).					
49. Replacing of one new tyre (200x16).					
50. Replacing of one new tyre (200x16).					
51. Replacing of one new tyre (200x16).					
52. Replacing of one new tyre (200x16).					
53. Replacing of one new tyre (200x16).					
54. Replacing of one new tyre (200x16).					
55. Replacing of one new tyre (200x16).					
56. Replacing of one new tyre (200x16).					
57. Replacing of one new tyre (200x16).					
58. Replacing of one new tyre (200x16).					
59. Replacing of one new tyre (200x16).					
60. Replacing of one new tyre (200x16).					
61. Replacing of one new tyre (200x16).					
62. Replacing of one new tyre (200x16).					
63. Replacing of one new tyre (200x16).					
64. Replacing of one new tyre (200x16).					
65. Replacing of one new tyre (200x16).					
66. Replacing of one new tyre (200x16).					
67. Replacing of one new tyre (200x16).					
68. Replacing of one new tyre (200x16).					
69. Replacing of one new tyre (200x16).					
70. Replacing of one new tyre (200x16).					
71. Replacing of one new tyre (200x16).					
72. Replacing of one new tyre (200x16).					
73. Replacing of one new tyre (200x16).					
74. Replacing of one new tyre (200x16).					
75. Replacing of one new tyre (200x16).					
76. Replacing of one new tyre (200x16).					
77. Replacing of one new tyre (200x16).					
78. Replacing of one new tyre (200x16).					
79. Replacing of one new tyre (200x16).					
80. Replacing of one new tyre (200x16).					
81. Replacing of one new tyre (200x16).					
82. Replacing of one new tyre (200x16).					
83. Replacing of one new tyre (200x16).					
84. Replacing of one new tyre (200x16).					
85. Replacing of one new tyre (200x16).					
86. Replacing of one new tyre (200x16).					
87. Replacing of one new tyre (200x16).					
88. Replacing of one new tyre (200x16).					
89. Replacing of one new tyre (200x16).					
90. Replacing of one new tyre (200x16).					
91. Replacing of one new tyre (200x16).					
92. Replacing of one new tyre (200x16).					
93. Replacing of one new tyre (200x16).					
94. Replacing of one new tyre (200x16).					
95. Replacing of one new tyre (200x16).					
96. Replacing of one new tyre (200x16).					
97. Replacing of one new tyre (200x16).					
98. Replacing of one new tyre (200x16).					
99. Replacing of one new tyre (200x16).					
100. Replacing of one new tyre (200x16).					

5N-BPT/ Fleet No. L3-23

DETAILS OF WORK DONE	JOB CARD NO.	COST OF REPAIR	TOTAL COST TO DATE	COST CLERK SIGNATURE	REMARKS
Replacement of one new tyre & tube 700 x 16; Motor Service was also carried out and this equipment @ 2058.8 hrs					2058.8 hrs
Vulcanized one tyre 700 x 16					
Replaced one of this tyres (700x16) with brand new one (tube)					
Vulcanized & replaced one tyre (front left tyre).					
Motor Service done @ 2303.1 hrs					2303.1 hrs
Vulcanized one tyre 700 x 16					
Motor Service done @ 2542.2 hrs					2542.2 hrs
Motor Service done @ 2629.6 hrs					2629.6 hrs
Replaced 3 litres of engine oil.					
Replaced one new tyre & tube 700 x 16					
Motor Service done @ 3129.9 hrs (572.9 hrs after changed). Topper with 17.14					3129.9 hrs
Engine oil: 1 tin of brake fluid & water coolant.					
2010					
Motor Service was done @ 3452.3 hrs.					
Replacement of one new tyre & tube (700x16)					
Replacement of one new tyre.					
Motor Service was done @ 3435.5 hrs. Engine oil was changed. Fuel filter replaced and filter cleaned while oil filter was not available to be changed at the time of service.					



NIGERIAN AIRCRAFT HANDLING CO. LTD. PLANT/VEHICLE RECORD

Mechanical

FLEET NO L3-23 MAKE Stearns Tug 660 TYPE BELT DRIVER MODEL 660 241 UNIT SERIAL NO 5791
 ENGINE NO 10399162 ENGINE TYPE Deutz TRANS TYPE Auto DRIVE AXLE TYPE Leaf
 PUWER Leaf YEAR OF MANUFACTURE 08/07 COST _____ DATE COMMISSIONED _____

DETAIL OF WORK DONE	JOB CARD NO	COST OF REPAIR	TOTAL COST TO DATE	COST CLERK SIGNATURE	REMARKS
1st Delivery Inspection (PDI)					0029 hrs
Major Service carried out @ 423 hrs					423 hrs
Major Service done @ 673.4 hrs (No filter was changed)					Clubs.
4th four types were also inflated. 700 x 16					
Kick starter solenoid problem corrected.					
Major Service done @ 0986.7 hrs (all filters and engine oil was changed except the air filter which was cleaned.)					0986.7 hrs
Major Service done @ 1233 hrs					1233 hrs
Minor Service done @ 1308.9 hrs					1308.9 hrs
Major Service done @ 1585.3 hrs					1585.3 hrs
Worked on the kickstarter motor, new etc.					
Minor Service done @ 1625 hrs					1625 hrs
Replaced two new tires 700 x 16, new etc for operation.					
Replacement of old new type of tube 650 x 16					
Major Service done @ 1761 hrs					
Removed one tyre from L3-18 to make L3-23 serviceable.					
Replacement of one new tube 700 x 16					

NAHCO: 076/5-96



NIGERIAN AIRCRAFT HANDLING CO. LTD. PLANT/VEHICLE RECORD

Electrician

EET NO <u>L3-23</u>		MAKE <u>Tru 660</u>	TYPE <u>BET LOMER</u>	MODEL <u>660241</u>	UNIT SERIAL NO <u>2791</u>		
ENGINE NO <u>10259162</u>		ENGINE TYPE <u>D5012</u>	TRANS TYPE <u>Auto</u>	DRIVE AXLE TYPE <u>REAR</u>			
APPLIER <u>KEES</u>		YEAR OF MANUFACTURE <u>8/07</u>	COST	DATE COMMISSIONED			
DETAIL OF WORK DONE			JOB CARD NO.	COST OF REPAIR	TOTAL COST TO DATE	COST CLERK SIGNATURE	REMARKS
P.D.-I.							6007ms
8 General electrical system check made.							
8 Conveyor belt could not engage reverse, problem has been rectified, now ok.							
8 Checking of all electrical fittings & correcting of malfunctioning ones.							
8 Checking of all electrical systems.							
8 Replacement of bad kickstarter solenoid to make the equipment serviceable.							
8 Worked on the starting system now ok.							
8 Changing of beacon light bulb.							
8 General electrical checks done.							
8 Fixing of beacon light.							
8 General electrical system checks made.							
8 Replacement of kickstarter with new one also re-routed and control of the starting circuit through spring loaded toggle switch.							
8 Repair of faulty kickstarter (its field line is burnt).							

NAHCO-0765-98

5N-BPT/ Fleet No. L3-23

L3-23		DETAIL OF WORK D.	JOB CARD NO.	COST OF REPAIR	TOTAL COST TO DATE	COST CLERK SIGNATURE	REMARKS
1	General electrical checks done.						
2	General electrical system checks done.						
3	Checked on the kickstarter motor, new ok.						
4	General electrical system checks done.						
5	Rectification & installation of kickstarter.						
6	Fixed the horns & brake lights, new ok.						
7	Completed new kickstarter motor, new ok for service.					OK	
8	Replaced faulty ignition key and starter toggle switch, introduced auxiliary solenoid in the starting circuit.						
9	Change of horn & service of horn switch.						
10	General electrical checks done.						
11	Electrical system checks done.						
12	Rectification of faulty headlight, horns and beacon light circuit.						
13	Beacon light and faulty headlamp rectified.						
14	Electrical system checks done.						
15	Electrical system checks done.						
16	Electrical system checks done.						
17	2010						
18	Replacement of the beacon light with L10-23 amber light.						
19	Replacement of the burnt beacon light cable. L3-23 battery replaced from L10-23.						
20	Left in store to make it serviceable.						



L3-23

NIGERIAN AVIATION HANDLING CO. PLC.

PLANT/VEHICLE RECORD

71 Ety

LEET NO _____ MAKE _____ TYPE _____ MODEL _____ UNIT SERIAL NO _____

ENGINE NO _____ ENGINE TYPE _____ TRANS TYPE _____ DRIVE AXLE TYPE _____

UPPLIER _____ YEAR OF MANUFACTURE _____ COST _____ DATE COMMISSIONED _____

E	DETAIL OF WORK DONE	JOB CARD NO.	COST OF REPAIR	TOTAL COST TO DATE	COST CLERK SIGNATURE	REMARKS
1a	Changing of battery light bulb.					
2	Checking of all the electrical system.					
3	Replacement of faulty master light.					
4	Replace light-switch is faulty.					
5	Battery with flat & placed on charge. Replacement was made from 101-28 from 101-28					
6	to make of serviceable.					
7	Installation of one new head light.					
8	Replacement of starting problem.					
9	Replacement of starting problem.					
10	The battery battery 101-28 placed on that equipment is bad. Replacement was made with the one sent from the workshop.					
11	Replacement of open circuit fault.					
12	After motor is bad - Need replacement.					
13	The bad lower motor was replaced with a new one.					
14	The battery of this equipment was flat & placed on charge.					
15	The battery is flat. Replaced from 101-22 to make it serviceable.					
16	Installation of one headlight.					
17	General checking of all the electrical wiring & components.					

NAHCO: 07/6/2-08

