

**FINAL REPORT OF SERIOUS INCIDENT OF MYANMAR NATIONAL
AIRLINES EMBRAER-190 (Reg: XY-AGQ) AND
MANNYADANARPON AIRLINES ATR-72-212A (Reg: XY-AJP) AT DAWEI
DOMESTIC AIRPORT ON JUNE, the 25th, 2016**

SYNOPSIS

At 13h07 (Local time) on June, the 25th, 2016, the right hand (RH) wing of Embraer-190 (Reg : XY-AGQ), while entering into the apron, clipped the RH wing of ATR – 72-212A(600 version) aircraft, registered (XY-AJP) which was parked on the same apron in Hotel Mode at Dawei Domestic Airport (VYDW). On board the Embraer-190 were the Pilot-in-command (PIC), First Officer (FO), 3 cabin crew and 59 passengers. On board the ATR – 72 - 212A (600 version) aircraft were the PIC, FO, 2 cabin crew and 20 passengers. The RH wingtip of the Embraer 190 was broken and the RH wing of ATR – 72-212A (600 version) aircraft was also damaged. No one was injured in this serious incident.

Aircraft Details

Myanmar National Airlines

Registered owner and operator	: Myanmar National Airlines
Aircraft type	: Embraer -190
Nationality	: Republic of the Union of Myanmar
Registration	: XY-AGQ
Place of Occurrence	: Dawei Domestic Airport N 16° 54' 59.54", E 96 8' 25.23"
Date & Time	: 25 June 2016 at 13h 07 Local time (UTC+ 7h 17)
Type of operation	: Scheduled Passenger Domestic Flight
Phase of operation	: Apron
Persons on Board	: Crew - 5, Passengers - 59

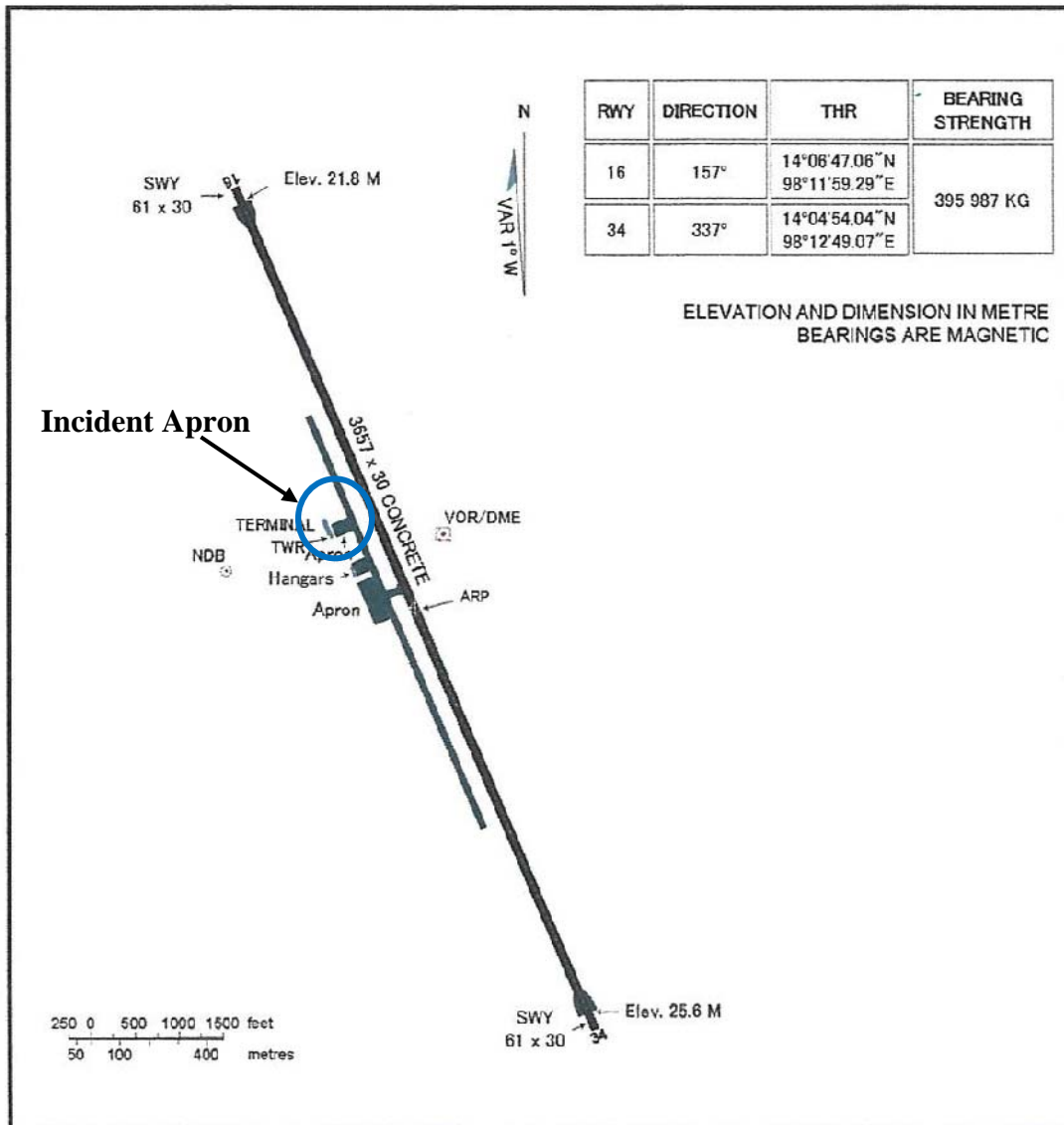


Figure: 1 Layout of Incident Site



Figure: 2 Layout of Incident Site

1.2 Injuries to Persons

1.2.1 Myanmar National Airlines

Injuries	Crew	Passengers	Other	Total
Fatal	0	0	0	0
Serious	0	0	0	0
Minor/ None	5	59	0	64
Total	5	59	0	64

1.2.2 Mannyadanarpon Airlines

Injuries	Crew	Passengers	Other	Total
Fatal	0	0	0	0
Serious	0	0	0	0
None	4	20	0	24
Total	4	20	0	24

1.3 Damage to Aircraft

1.3.1 Myanmar National Airlines (Embraer-190) (XY-AGQ)

The R/H Winglet was broken.

1.3.2 Mannyadanarpon Airlines ATR-72 -212A(600 Version)(XY-AJP)

- (a) The R/H Wing Tip was broken.
- (b) The Aileron attachment rib of R/H Wing was broken.
- (c) The lower and upper skin of R/H Wing was damaged.



Figure: 3 Overview of damages to both aircraft



Figure: 4 The damaged aileron of the RH wing of the ATR-72-212A (600 version) aircraft



Figure : 5 The damaged lower skin of the RH Wing of the AT -72-212A (600 version) aircraft



Figure: 6 The damaged lower skin of the RH Wing of ATR – 72-212A (600 version) aircraft



Figure: 7 The damaged upper skin of the RH Wing of ATR – 72-212A (600 version) aircraft



Figure: 8 The broke winglet of the RH Wing of the Embraer-190



Figure: 9 Available space from the wing tip of the Embraer-190

1.4 Other Damage

There was no other damage in this serious incident.

1.5 Personnel Information

Pilot in Command (Myanmar National Airlines)

Age : 38
 Licence : ATPL-461
 Licence issued date : 25th, APRIL, 2011
 Total hours : 5012:45
 On type : 2059:30
 Medical expire : 30. JUN.2017
 Line check date : 27. JUL .2015(P.C,I/R Date-25 MAY,2016)
 Type rating check date : 10. JUL .2015
 Last 90 days : 202:55
 Last 30 days : 51:42
 Last 24 hours : Nil

Co-Pilot (Myanmar National Airlines)

Age : 23
 Licence : CPL 464
 Licence issued date : 14-2-2014
 Total hours : 677:41
 On type : 403:26 (Embraer E-190)
 Medical expire : 31-2-2016
 Line Check date : 03-09-2015
 Type rating check date : 18-8-2015
 Last 90 days : 130:47
 Last 30 days : 32:38
 Last 24 hours : Nil

Pilot in Command (Mannyadanarpon Airlines)

Age : 39
Licence : ATPL 430
Licence issued date : 24.8.2011
Total hours : 6420:00
On type : 5900:00
Medical expire : Sep 2016
Line check date : 27.2.2016
Type rating check date : 29.4.2015
Last 90 days : 162:32
Last 30 days : 66:55
Last 24 hours : Nil

Co-Pilot (Mannyadanarpon Airlines)

Age : 39
Licence : ATPL 519
Licence issued date : 11.2.2014
Total hours : 2837:06
On type : 1232:16
Medical expire : 31.3.2017
Line check date : 14.8.2014
Type rating check date : 7.1.2014
Last 90 days : 28:20
Last 30 days : 28:20
Last 24 hours : 1:09

Air Traffic Control

- (1) Age : 29(male)
 Licence : Air Traffic Controller Licence 0119
 Designation : ATCO II(duty controller)
 Work scheduled : Operation hours
 Medical : valid
- (2) Age : 26(female)
 Licence : Air Traffic Controller Licence 0138
 Designation : ATCO I
 Work scheduled : Operation hours
 Medical : valid

Marshaller

- (1) Age : 40 (male)
 Licence : Nil (There is no license practice in Myanmar yet.)
 Designation : Assistant Supervisor
 Organization : Myanmar National Airline
 Medical : Nil

1.6 Aircraft information

1.6.1 General

Myanmar National Airlines Aircraft

Manufacture : EMBRAER
 Type : ERJ 190-100
 Serial number : 19000231
 Date of Manufacture : 01 December 2008
 Total flight hours : 15527:28 HRS
 Certificate of Registration : XY-AGQ
 C of A issue date : 18 January 2017

AOC renewal date : 02 Nov 2015
 Periodical inspection, B check : H-1, H-3,72 MON CK(01 October 2012)

Mannyadanarpon Airlines Aircraft

Manufacture : AVIONS DE TRANSPORT REGIONAL
 Type : ATR-72-212 A (600)
 Serial number : 1137
 Date of Manufacture : 2014
 Total flight hours : 5464:17
 Certificate of Registration : XY - AJP
 C of A issue date : 09 April 2017
 AOC renewal date : 19 Feb 2016
 Periodical inspection, A check : 5231:39 18 May 2016
 Periodical inspection, B check : 4784:53 19 March 2016

1.7 Meteorological Information

The METAR reported at Dawei Domestic Airport on the 25th at 5h 30 (UTC) was wind calm, visibility 2 to 3 mile, Cloudy BKN 3000' to 4000', Temperature 29 C, QNH 1008 01:00 PM wind calm, visibility 4 to 5 mile, Cloudy to fair BKN 3000' to 4000', Temperature 30C, QNH 1007.

1.8 Aid to Navigation

Dawei Domestic Airport was equipped with the following facilities:

VYDW AD 2.19 RADIO NAVIGATION AND LANDING AIDS

Type of aid CAT of ILS/MLS (MAG VAR)	ID	Frequency	Hours of operation	Transmitting antenna coordinates	Elevation of DME transmitting antenna	Remarks
1	2	3	4	5	6	7
VOR/DME	DWI	CH 57X 112 MHz	H24	140601.47N 0981227.98E	98 FT	Coverage: 180 NM Em:
NDB	DWI	310 kHz	HO	140558.61N 0981201.67E	Not applicable	Coverage: 60 NM Em: NONA2A

1.9 Communication

Communication facilities are as follows:

VYDW AD 2.18 ATS COMMUNICATION FACILITIES

Service designation	Call sign	Channel	Hours of operation	Remarks
1	2	3	4	5
DAWEI APPROACH CONTROL	DAWEI APP: EN	119.700 MHz	HO	Nil
DAWEI TOWER	DAWEI TOWER: EN	118.700 MHz	HO	Nil

There was no record of unserviceable equipment on the day of occurrence.

1.10 Aerodrome Information

Dawei Domestic Airport has one main runway 16/34 with a length of 12000ft and wide of 100 ft at an elevation of 84ft above mean sea level and is certified for both VFR and IFR flight. The airport has an ATC control tower, controlling class B airspace with radar surveillance.

The aerodrome category for fire fighting is CAT3.

As shown in **Figure 1** the old runway had been used as a taxiway which had connected to the aprons. No taxiway markings, aircraft stand markings and apron safety lines existed on the so-called taxiway and the incident apron.

1.11 Recorders

The Embraer aircraft was installed with a 25-hour solid state Digital Voice Data Recorder (DVDR) with SER-02931 and PNR 980-6025-001 from Honeywell International Inc. It was downloaded at Ametek Singapore Pte Ltd and CVR was analysed and transcribed at Transport Safety Investigation Bureau (TSIB) Singapore and FDR readout was done by UK avionics shop via Ametek secured data exchange website.

The data downloaded from the DVDR was of good quality and comprised flight data parameters and cockpit voice information recorded during the occurrence.

No aircraft system defect or anomaly was observed in the recorded flight data parameters.



Figure:10 Digital Voice Data Recorder (DVDR)



Figure: 11 Digital Voice Data Recorder(DVDR)



Figure:12 Digital Voice Data Recorder(DVDR)

1.12 Wreckage, Site and Impact Information

The coordinates of accident site is Latitude N 140550.55, Longitude E0981224. 18. When Myanmar Aircraft Investigation Bureau (MAIB) investigators arrived at the occurrence site at about 10 am on 28th June 2016, the aircraft were on the apron of Dawei Airport. It was raining drizzly, sometimes heavily and the runway was wet.

Measurements and photographs were taken of the site and casual interviews were conducted among witnesses.

1.13 Medical and Pathological Information

The PIC and FO of the Embraer 190 underwent medical examination following the occurrence. There was no evidence of any relevant medical factors that could affect the performance of the pilots. It was raining, with occasionally heavy showers, and the runway was wet.

Measurements and photographs were taken of the site and casual interviews were conducted with the witnesses.

1.14 Fire

There was no fire before, during and after the accident.

1.15 Survival Aspects

As soon as the occurrence happened, the cabin crew in both aircraft ensured that the passengers disembarked the aircraft safely and who were then sent to the airport terminal. The fire fighters were on standby at the apron and ready to initiate rescue operation.

1.16 Test and research

On the incident apron, measurements were taken to determine if two aircraft can be accommodated safely in that area.

Looking out from the pilots seat and the copilot seat was made to ensure that whether the copilot was able look out and see outside condition from theirs seat and the windscreen and cockpit windows were tested and operated whether they were properly working or not. The investigation team determined that visibility was good from both the pilot and co-pilot's seats on the Embraer E 190. It was also determined that the right wingtip was visible from the position where the co-pilot was seated.

The PIC repeatedly asked the FO, while taxiing into the parking spot if it was clear. The copilot repeatedly replied it was clear.

Flight operations procedures were checked to ensure that the pilot strictly followed their SOP or not.

It was determined that aerodrome controllers were able to maintain a continuous watch on all flight operations from the control tower.

1.17 Organizational and Management Information

1.17.1 Myanmar National Airlines

Myanmar National Airlines (MNA) headed by Chief Executive Officer (CEO) is the national flag carrier of Myanmar and has the most extensive network in the country and international schedule flight to Singapore, Chanmai and Hongkong as well. It has its own ground handling section, especially strongly supported in three international airports. Ground Handling Staff were given training such as Ground Handling, Safety Management System (SMS) Dos and Don'ts Lessons. In some domestic airports, they have to perform dual functions both commercial ticketing and ground handling service as well. The Marshallers belonged to MNA airlines. Those who were providing ground handling service to their aircraft as Marshallers and wing walkers assumed that it was not their own duty and responsibility.

1.17.2 Air Traffic Control

Department of Civil Aviation is the air traffic control service provider at Dawei Airport.

1.18 Additional Information

1.18.1 Testimony of Myanmar National Airlines Pilot

He stated he was flying the flight number UB 315/6, Yangon–Dawei-Kawthaung - Dawei - Yangon. He entered flight level and runway in FMS. The flight level was 27000 ft. The estimated time of Mannyadanapon flight was 0621(UTC) and mine was 0622 (UTC), lessened the speed of flight from 210 to 180. At 20 DME he made a circle. He landed the plane as usual and taxied to the apron. Mannyadanapon flight was parked on the northern part of the same apron. In case he feared that the plane should hit the fence, he moved aside to Mannyadanapon plane. He asked his F/O whether the plane was well clear from the Mannyadanapon plane and other obstacle two or more times. His F/O replied it was clear, clear. But He heard the noise of something, thinking that because of pop corn and pulled the brake and while glancing at the ground crew, he found the "Stop Signal". After that when he checked it through the F/O side window, he came to know he hit the other plane. Regarding CRM, it was stated his F/O was stubborn and didn't feel like being corrected and didn't pay heed. He himself made his judgment for the passenger evacuation based on the outside situation and damage of the aircraft. He had made up his mind not to execute the Emergency Procedure just after this occurrence. He had been flying to Dawei Airport since 2007. He recommended that apron marking should be provided and well-trained marshaller should be utilized for prevention of the same types of occurrences.

1.18.2 Testimony of Myanmar National Airlines First Officer

He stated that the route on that day was Yangon –Dawei- Kawthaung-Dawei- Yangon. While their plane taxiing into the apron, the RH winglet of theirs hit the wing of other aircraft ATR 72 (Reg XY-AJP). ATR 72 (Reg XY-AJP) aircraft was parked in a nose out position. His pilot 's intension was to make 180 turn and parked in a nose out position. As a rule, their plane was used to taxi in along the left side of the apron and then made turn in a nose out position. He stated that his pilot action regarding parking manoeuvre was not as normal as before. Even though he made suggestion to his pilot, his pilot didn't change his mind for his intension. Being clear from the obstacle, he said that it was clear, clear repeatedly. At that moment, It was seen that a ground marshaller gave a positive sign by the wing of other aircraft. But his pilot got closer and closer to the other plane, ATR 72(Reg XY-AJP) when he got nearer and nearer to it in order to get more space for left 180 turn.

He also stated that the weather on that day was a bit bad in Dawei. Their plane was the third one to land to Dawei Airport approach as per ATC instruction. The second was Apex Aircraft and the third ATR 72 (Reg XY-AJP) respectively. He thought his pilot got upset and angry.

For the prevention of such occurrences, parking area should be extended; algae should be removed in the rainy season; well-trained marshallers should be allocated in domestic airports; weather forecast from ATC should be more accurate and current; weather radars should be equipped at Towers; superiority complex should be managed to reduce as per CRM; and following SOP and CRM should be effectively implemented.

1.18.3 Testimony of the Marshaller

He stated that he had worked at Myanmar National Airline for (14) years. Before, he worked at the store in Mechanical Department for 7 years; he had been on duty here at Dawei Airport since last month. He had got the training course such as Ground Handling, and SMS. It was stated that the training period was not sure whether one day or there days and no certificates for evidence and no license for the marshaller either. On 25th June, 2016 weather condition is drizzle but clear vision. The Marshaller should have shown "**Negative sign or Emergency Stop Signal**" (20) feet or (15) feet according to the theory. On that day the negative signal was shown to First officer, (9) or (10) feet away while the taxiing aircraft was approaching in, two aircraft wings was not clear enough condition. Some people were in front of aircraft. After two aircraft wings hit each other, he called DCA office and Yangon Office to inform but phone was busy, and contacted on the phone to the ground Handling Director, U Kyaw Zay Ya , and then he was going to help push the mobile step, Two foreigner passenger were on board , Meanwhile he did not notice what MNA pilot and Co-Pilot were doing and then passengers disembarked to the airport terminal safer place with the help of cabin crew and ground personnel. Before he had no experience like this occurrence. For prevention of such occurrence that's why for every domestic airport well-defined marshaller should be assigned and allocated.

1.18.4 Testimony of Duty Air Traffic Controller

The duty air traffic controller stated that he transferred to Dawei Airport from Yangon International Airport on 1st June 2016 and he started as duty officer on 6th June 2016. While he was working at Dawei Airport in which it is operation Myanmar National Airlines, Mannyadanarpon Airlines, Apex Airlines and Air KBZ. On 25th June 2016, the Apex Airlines (flight Number SO201) departed from Yangon Airport at 05:10 (UTC) and estimated time of arrival (ETA) to Dawei Airport was 06:08(UTC). Mannyadanarpon Airlines (flight Number MYP 531) departed from Yangon Airport at 05:23 (UTC) and estimated time of arrival

(ETA) to Dawei Airport was 06:21 (UTC). Myanmar National Airlines (flight Number UBA 315) departed from Yangon Airport at 05:40 (UTC) and estimated time of arrival (ETA) to Dawei Airport was 06:31(UTC). The SO 201 arrived at the Dawei Airport and then while the passenger embarked onto the plane to go the Kawthaung airport, MYP 531 taxied into the apron of Dawei Airport. The Mannyadanarpon was given the instruction to park in the northern part of the apron. At 06:31 (UTC) ERJ 190 (Reg XY-AGQ) landed, he instructed" continued taxi to apron and follow marshaller " to it. It was reported that the wing was hit. And the engine was shut down. He stated that he didn't give any caution to the ERJ 190(Reg XY-AGQ) since he thought it was normal while entering into the apron.

2 ANALYSIS

2.1 Introduction

The analysis by the investigation team has focused on the following areas:

- a) Individual/team action
- b) Flight recorder data analysis
- c) Cockpit Voice Recorder
- d) Aerodrome Condition
- e) Operating Procedures(After Landing Procedures/Taxiing)

2.2 Individual/Team Action

2.2.1) Flight Crew

Both the pilot-in-command (PIC) and co-pilot from Myanmar National Airlines had operated into Dawei Airport many times and were familiar with the runway condition and airport facilities. The PIC had (513:00)hours on type and total flying hours(6603:03) and the co-pilot (2650:00) hours on type ATR respectively. Their licenses were valid.

2.3 Flight Recorder Data Analysis

There was no damage observed to the flight recorders. The interface pins for both recorders were checked and they appeared to be in good condition.

The data downloaded from the DVDR was of good quality and comprised flight data parameters and cockpit voice information recorded during the occurrence.

No aircraft system defect or anomaly was observed in the recorded flight data parameters.

2.4 Cockpit Voice Recorder

As per Cockpit Voice Recorder, the pilot from Myanmar National Airlines seemed to block the aircraft from Manyadanapon Airlines which had already parked earlier before he was entering the apron (at that time he was on the way to the apron). He seemed to get an idea to fly ahead of him. Therefore he seemed to make a 180 turn too close to the Manyadanarpon aircraft in a careless manner while entering the apron.

The copilot from Myanmar National Airlines didn't advise and warn anything about the obstacle to his commander although the obstacle and the wingman were on his side.

2.5 Aerodrome Condition

The runway of Dawei was a single one with (12000ft x 100ft). The runway designation numbers were **16/34**. The incident apron was (200ft x 230ft) and good enough to accommodate two aircraft such as Embraer -190 and ATR-72. The runway markings were not good enough for visual aids for aircraft operations and there were no apron markings.

2.6 Operating Procedures (After Landing Procedures/Taxiing)

According to the operating procedures (2.22 After Landing Procedures) from Myanmar National Airlines it says "***During taxi avoid unnecessary activities or conversations. Both pilots shall pay attention to the taxi routing***

and/or ATC instructions."

According to the operating procedures (8.3.19.21Taxiing) it says "*Taxiing must not commence until a visual clearance left and right has been conducted and verbalized.*"

Both pilots from Myanmar National Airlines, however, were not able to ensure paying attention to the taxi routing and a visual clearance left and right for their aircraft while taxiing into the apron.

3 CONCLUSIONS

3.1 Findings

From the evidence available, the following findings are made. These findings should not be read as apportioning blame or liability to any particular organization or individual:

- a) The two pilots from Myanmar National Airlines were experienced , had enough rest hours before the flight and familiar with Dawei Airport.
- b) The copilot from Myanmar National Airlines had some limitation on eye sight as per medical certificate. Limitations said ,” **shall wear glasses for distant vision**”
- c) The marshallers were not properly trained and not licensed. They didn’t use marshalling bats and wands and had got to perform dual functions such as marketing and ground handling service.
- d) The communication system between ATC and pilots was normal.
- e) Although the duty air traffic controller is not able to assist directly in the aircraft taxi operation to ensure it will not collide into obstacles, he can provide a caution to the pilots if he knew that they would be taxiing into a confined area.

- f) No apron markings and apron safety lines was found to exist even though ICAO Annex 14(5.2.14) requirements specify that such markings are necessary to ensure safe ground maneuvering of aircraft.

3.2 Primary Cause

During taxiing into the apron, the pilot was carelessly maneuvering the aircraft and trying to make 180 turn too close to another aircraft on his own judgment in a rush-rush manner without proper help of the ground handling service .

3.3 Contributing Factors

- a) The copilot of the incident aircraft was not able to make right judgment on taxiing into the apron whether his aircraft was clear of obstacle or not.
- b) The wingman and marshaller were not able to identify so early whether their aircraft was clear of obstacle or not.
- c) The pilot had no fully faith and trust on their own ground handling service personnel in terms of ground handling service.

4 SAFETY RECOMMENDATIONS

To reduce and eliminate of accidents and serious incidents, MAIB recommended the followings:

- 4.1 The pilots from Myanmar National Airlines should strictly follow their standard operating procedures.
- 4.2 The ground handling service personnel should be properly trained and assigned to perform only one specific duty with proper equipment and adequate man power.
- 4.3 The airport operator evaluate the need for apron markings to be introduced in domestic airports.
- 4.4 The civil aviation authority ensure that the airport operator evaluate the need for apron markings to be introduced in domestic airports.

Investigator -in -charge

Appendices

- Appendix A - Standard Operating Procedures of the Embraer 190
- Appendix B - Standard Operating Procedures of the ATR 72 - 212A
- Appendix C - Organizational Chart of Myanmar National Airlines
- Appendix D - CVR Transcript from the Embraer 190
- Appendix E - XY-AGQ Trace of End of Flight
- Appendix F - ICAO Annex 14(5.2.14)
- Appendix G - Instrument Approach Chart