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OFFICE OF THE CHIEF INSPECTOR OF AIR ACCIDENTS

MINISTRY OF TRANSPORT

MALAYSIA

AIR ACCIDENT INVESTIGATION REPORT

AIRCRAFT ACCIDENT REPORT 01/12

REPORT ON THE ACCIDENT TO SEBIRO HOLDING SDN BHD
AT BATANG LUPAR RIVER, KUCHING, SARAWAK. MALAYSIA
ON 20 July 2012

22 July 2013

OFFICE OF THE CHIEF INSPECTOR OF AIR ACCIDENTS
MINISTRY OF TRANSPORT MALAYSIA
REPORT ON THE ACCIDENT TO EC120 REGISTRATION N8899
AT BATANG LUPAR RIVER, KUCHING, SARAWAK. MALAYSIA
ON 20 July 2012

Aircraft Type:	EC120B
Aircraft Registration:	N8899
State of Registration:	USA
Operator / Owner:	Sebiro Holdings Sdn. Bhd.
Location:	Estuary of Batang Lupar river near Kuching, Sarawak
Date of Accident:	20 July 2012
Time of Accident:	0930LT
Investigation Team:	1. **Capt, Ismail Yahya from the Flight Operations Sector** 2. **En. Lai Meng Woei from the Airworthiness Sector**

Local Time (LT) is UTC plus 8 hours. All times in the report are local times.

This investigation is carried out to determine the circumstances and causes of the accident with a view to the preservation of life and the avoidance of accidents in the future. It is not the purpose to apportion any blame or liability (Annex 13 to the Chicago Convention and Civil Aviation Regulations of Malaysia 1996)

CONTENTS LIST

1.0 SYNOPSIS

The accident was notified to the Department of Civil Aviation (DCA) by the DCA Kuching on the 20th July 2012. An investigation team from DCA was formed to undertake the investigation.

The helicopter with 4 persons on board crashed at the estuary of Batang Lupar River after attempting to turn back at low level in marginal weather condition. From the survived pilot account, the turn was initiated by him with the intention to look for a safe landing place as he claimed the helicopter was experiencing vibration, very heavy on the controls and unable to arrest the descent. It is believed that the helicopter hit the water during the turn and toppled on its port side, afloat for a few minutes then sunk into the river bed. He further stated that all the occupants managed to evacuate from the wreckage. After devising for the 3 passengers a makeshift float from some drinking bottles available onboard the aircraft, the pilot then decided to swim onshore for help. Unfortunately, all the passengers were later found drowned.

2.0 FACTUAL INFORMATION

2.1 History of the flight.

The helicopter bearing registration N 8899 was on a communication flight from Kuching International Airport to Nanga Merik, near Kapit in State of Sarawak. It was a private flight with one pilot and three passengers on board. It departed Kuching Airport at 0857 LT and reported over Kampong Kuap at 0901 LT, enrouting to Kampong Triso. The flight encountered unfavourable weather condition with light rain and low clouds. The normal routing should be by Lane 3, the route required to be followed as per the flight plan. Due to the increment weather, he got deviated from his flight routing and instead flew via Lane 4 in order to maintain visual contact. The pilot opted to fly low at an altitude of 500 feet above ground level (agl) instead of 2000 feet agl as requested in his flight plan. The last radio contact was at 0922LT when Maswing (MWG3417) relayed a message from flight N8899 indicating the helicopter was 4 nm from Triso.

According to the pilot the helicopter then flew to Semera and maintained coastal until Batang Lupar River. After approximately 25 minutes flight, he had to cross the river towards its destination. While crossing the river he claimed that the helicopter developed severe vibrations and stiffness on all controls. The pilot then decided to turn back 180^0 anti-clockwise to reach for the land. During the turn, the helicopter started to descend and the pilot claimed that he was unable to control the descend due to the controls becoming erratic and hard to move. The descend was unchecked by the pilot until the main rotor blades hit the water and subsequently crashed into the river. The helicopter was afloat initially, thus allowing the occupants to escaped from the wreckage, then toppled to the left before sinking. According to the pilot they managed to talk to each other briefly and prepared themselves to keep afloat before the wreckage sank. The pilot decided to leave the passengers and swam to the shore to ask for help. Unfortunately it took him two and half hours to reach the coast to get help. Meanwhile all the three passengers supposedly left behind at the crash site with the makeshift float were unable to save their lives. Later, all were found drowned at several locations along the coast off Batang Lupar estuary.

2.2 Injuries to persons.

	Crew	Passengers	Others
Injuries			
Fatal		3	
Minor			

2.3 Damage to aircraft.

At the time of the completion of this report, the helicopter which crashed into the river has not been recovered. Although every effort was made to locate the wreckage, it was not successful. Wreckage inspection was not done.

2.4 Other damages.

Not known

2.5 Personnel information:

a. **Pilot**

b. Licence: FAA Commercial Rotorcraft 3260875

c. Aircraft ratings: EC120B, R22, R44, B47, 206B3, HU369C

d. Medical certificate: Valid until 31. 07. 2012

e. Flying experience: Total all types – 1,435.6 hours

f. Total on type – 217 hours

g. Last 28 days – unknown

h. The pilot, a German citizen was relatively new on type having obtained his EC120B rating from Eurocopter Malaysia February 2010. His last flying check was carried out on 5th Sep 2011. He has been flying for this company since then, approximately about 9 months. Unfortunately he could not provide many details about his flying records with this company as he claimed that his licence, his flying logbook and aircraft technical logbook all went down with the helicopter. He also did not have proper office to keep relevant records, documents, manuals, etc. for running the operations. Our further inquiries with the ATC in Kuching, about his flying activities, reveal startling results such as there have been occasions whereby he was reported to have landed in some remote interiors of Sarawak without informing the relevant or nearest ATC prompting a decision to activate the RCC. But fortunately it was never done.

2.6 Aircraft information: (See Exhibit 10)

Manufacturer:	Eurocopter France
Registration:	N8899
Type:	Eurocopter EC 120B
Engine Type:	Turbomeca Arrius 2F
Engine SN:	34613
Date of Manufacture:	22 April 2008
Registered Owner:	Sebiro Holding Sdn Bhd

Total Airframe Hours:	500.7
Certificate of Airworthiness:	Valid FAA Standard Category Certificate of Airworthiness
Engine Hours:	500.7
Last Maintenance Check:	100 hours on 28/06/2012
Significant defects prior to flight:	None

The helicopter is a model Eurocopter EC120B, single pilot, five passengers, single turbine engine light helicopter with a three-bladed main rotor system, and a fenestron tail rotor system that provides directional control.

The helicopter Eurocopter EC 120B Serial Number 1541 was manufactured in 2008 and first registered in United States of America as N320AH on 22 April 2008 and subsequently on the same date was re-registered as N8899. Prior to being registered in United States of America, the helicopter was newly manufactured at Eurocopter France. The helicopter was initially maintained by Eurocopter Malaysia Sdn Bhd until March 2012. Between March 2012 and June 2012, the helicopter was maintained by Hammock Helicopter Sales & Service. Lastly, since June 2012 until the accident on 20July 2012, the helicopter was maintained by Erickson Air-Crane (Malaysia).

The helicopter was acquired by Sebiro Holding and used for private purposes.

Prior to the accident, the helicopter had recorded total Airframe hours of 500.7. The engine fitted was Turbomeca Arrius 2F. The engine hours recorded was also 500.7.

Interview conducted with the Engineer responsible for the maintenance of the helicopter before the accident revealed that, the pilot did not report any abnormality or defect on the helicopter.

The following maintenance works were recorded since 28 June 2012 :

28 June 2012 – 100 hours maintenance check was carried out
28 June to 16 July 2012 – 24.9 hours flown and nil defects

The following certificates were sighted:

1. USA Certificate of Registration was issued on 22 April 2008, showing Helicopter Asia Inc. as the owner.

2. USA Certificate of Airworthiness was issued on 25 July 2008 and was valid.

The last maintenance visit was the 100 hours airframe/engine inspection per Erickson Air-Crane Sdn Bhd's Job Number EACM-07-12 dated 28/06/2012.

2.7 Meteorological information:

The enroute meteorological report for for the helicopter is not known but it is generally known to be severe tropical rain and low visibility such that all other helicopter that were planning to fly at that time remains on the ground.

2.8 Basic weights (Estimated):

Basic Weight:	1,100 kg
Crew:	65 kg
Passenger:	195 kg
Baggage:	15 kg
USL Equipment:	-
Fuel:	325 kg
Take-off weight on departure:	1,700 kg

2.9 Communications.

Not a factor in this accident

2.10 Aerodrome information.

Nor a factor in this accident

2.11 Flight recorders.

N/A

2.12 Wreckage and impact information.

Wreckage is still not recovered as the time of writing this report

2.13 Medical and pathological information.

According to the pilot, the only survivor in the crash, all three passengers initially were alive when the helicopter hit the water. But after he left, the three passengers died due to drowning.

2.14 Fire.

There was no report of any pre or post crash fire

2.15 Survival aspects.

All the occupants initially survive the crash. Later 3 were found drowned. As the helicopter were not equipped with any floatation equipment or passenger life vests.

2.16 Tests and research.

Not considered essential in this investigation.

2.17 Organizational and management information.

The aircraft was privately owned, the owner made its own arrangement to employ its pilot and arranged for maintenance. The passengers were usually other than the employee staff, the contractors working with the company's projects around the state.

2.18 Additional information.

There are no records that the helicopter is equipped with any floatation equipment or passenger life vests.

Also there was no records of a valid certificate of insurance was available at the time of the accident

3. ANALYSIS

The helicopter was apparently serviceable when the pilot accepted the helicopter. During the interview, the pilot did not mention of any problem with the helicopter, in which he had flown for some times, until he claimed to have encounter the controls difficulties prior to the crash. Unfortunately, to confirm his claim, the investigation and examination of the wreckage must be made which is impossible as the wreckage was not recovered.

The decision by the pilot to take-off despite the inclement weather is an unnecessary risk-taking. Except for scheduled airlines flights no other VFR flights were reported during that time. In fact one airline aircraft was deviated away from flying overhead the accident area because of weather. It was reported that fishermen did not go out fishing due to bad weather warning, choppy sea and strong wing that morning.

The pilot also decided to fly low level over the water, lower than 500 ft according to the radar pick up, across the estuary of Batang Lupar River which is about 10 km wide without having emergency floatation and life vests for the passengers. The prolonged flight over water on a single engine helicopter, which was out of autorotation range to the land, is undesirable.

Pilot's Experience and Qualifications.

The pilot of the helicopter was suitably qualified to undertake the flight. His records indicated that he had sufficient experience and reasonable amount of flying hours. No previous records of adverse flying ability are available.

ALERTING SERVICE AND SEARCH AND RESCUE SERVICES

1. Introduction

Alerting and SAR procedures are guided by standards stipulated in Manuals of Air Traffic Services (MATS) Volume 1 Part 9 – Emergency Procedures. Overdue actions with regards to radio equipped aircraft is summarized in attachment A (extracted from Table 9-2.2). Declarations of emergency phases is guided by conditions as stipulated in paragraph 6.4 and 6.7 in MATS Volume I Part 9 (refer Attachment B).

2. Details of Flight

The helicopter originally lifted off from Simpang Tiga helipad at 0007UTC (08:07am LT) and landed in Kuching Aerodrome at 0010UTC (08:10am LT) It was airborne again at time 0057UTC (08:57am LT) bound for Nanga Merit. The flight plan noted that it will be on ground for 1 hour at Nanga Merit before proceeding to Sibu (Attachment C). The approximate routing of N8899 and associated significant locations are depicted in Chart A.

3. Alerting Service for N8899 on 20th July 2012

3.1 Ideally an alert would be raised if a known aircraft failed to report its location at a mandatory reporting point. Overdue actions will subsequently be initiated based on standard procedures.

3.2 In normal practice, VFR low level aircraft flying between Kuching and Sibu usually lose communications to the east of Kg. Triso until somewhere near Saratok, about 7nm form Sibu control zone. A relay by another aircraft may be possible if within range. Radio communications in the rural areas at low level is very much affected by equipment quality, weather, altitude and distance from radio station.

3.3 The N8899 was only equipped with VHF and not HF for radio communications with ATC. Kuching HF radio is also not reliable. Transmissions by aircraft could sometimes be heard but two-way communications could rarely be established outside Kuching terminal area. Kuching Approach Radar queried N8899's position as its radar target was observed to be coasting (which again was quite common for low level VFR aircraft). As expected, N8899 could not be directly contacted but managed to relay its position 4nm to Kg. Triso through Maswing 3417. A message was relayed to N8899 to advise its company and Sibu ATC before ending.

3.4 There was a miscommunication between Kuching FIS and Sibu ATC regarding the location of Nanga Merit: understood to be in Sarikei while its actual location is in Kapit. The long elapse between Kg. Triso and Nanga Merit (1 hour 10 minutes) was not queried by Sibu ATC as there was a general assumption that there might be en-route stops. Kinabalu

FIS was not informed of the flight due to the erroneous assumption that Nanga Merit is in Sarikei.

3.5 Normally, Kuching FIS, Sibu ATC and Kota Kinabalu FIS will cross-check with each other on aircraft's communication status along its route. However, the communications status of N8899 was not verified by Kuching FIS or Sibu ATC at the estimated time it was supposed to be able to contact Sibu. The last positive "contact" was through MWG3417 at Kg. Triso around 09:23am LT.

3.6 20 minutes after the estimated Nanga Merit landing time, Sibu started making enquiries to Kuching FIS as N8899 never establish contact with Sibu ATC. Widespread checks involving Kota Kinabalu, Sibu, Kuching FIS and the helicopter company, Sebiro Sdn. Bhd. were carried out between time 10:55am until 12:00 pm to determine the status and location of N8899 but to no avail.

3.7 The fuel endurance as reported at departure was 3 hours and 40 minutes, which confirms that aircraft fuel will be exhausted around 12:30 pm.

3.8 There was concern on the status of the aircraft, however no SAR phase was declared and communication attempts were continued to include Kota Kinabalu FIS as well.

3.9 At time 12:16pm the pilot of N8899, Capt. Rico, called Kuching Tower to inform that his aircraft has plunged into a river near Hilir Sebuyau. He had swum to safety and used a villager's mobile phone to call Kuching Tower. The Kuching RSC SAR Chief was informed of the accident.

4. SAR Service for N8899 on 20, 21 and 22 July 2012

4.1 The Kuching RSC SAR Chief was notified via telephone at 12:20pm LT by the Kuching ATCC Watch Supervisor of the crash while he was on his way for afternoon shift and be arrived at the Kuching ACC at 12:25pm LT. The ACC Watch Supervisor briefed the SAR Chief of the crash.

4.2 Based on initial information received during the pilot's telephone call, it was relayed to the SAR Chief that all 3 passengers were safe and only the wreckage needed to be located. Hence the Kuching RSC SAR Chief opined that the RSC need not be activated immediately.

4.3 Subsequently, the SAR Chief managed to talk to the pilot after receiving phone contact information from a Sebuyau RELA officer. It was then ascertained that the 3 passengers' safety was not assured and SAR services will be required. The crash site was reported by the pilot to be approximately 10-15nm south of Sebuyau and the pilot was rescued near Kg. Tebedu (0132N 11052E).

4.4 The Kuching RSC was activated at 13:39 LT. SAR Units (SRUs) were requested to be assigned search areas in an attempt to locate and rescue the three missing passengers. The first SRU was deployed to the search area at 14:19LT. RMAF, Police Airwing and APMM provided aircraft and vessels for the SAR operations.

4.5 SAR Operations was continued for 3 days and terminated after all 3 bodies of the missing passengers were found.

3. CONCLUSIONS

a. Findings

1. The pilot was medically fit and qualified to undertake the flight.

2. The pilot had sufficient experience for the operations.

3. The weather was not suitable for the intended flight.

4. The flight was not conducted in accordance to Part E, Eleventh Schedule of the MCAR 1996, for VFR operation.

5. No urgency or distress calls were made.

6. From the interview with the pilot, it is believed that the aircraft was not equipped with emergency flotation and life vests for the passengers to fly over vast expense of water. The pilot mentioned that when they were still floating, they were looking for any kind of floatation materials on the aircraft such as water bottles to keep the survivors afloat. This presumed that the aircraft did not carry life vests or emergency life rafts. The pilot knew he was about to cross a very wide river which is about 10 km wide.

7. The pilot flew low over a vast expanse of the water which was out of the autorotative range to the land.

8. The pilot did not activate the Emergency Locater Transmitter (ELT).

9. No proper office was made available for their helicopter operations including maintenance matters. As such records of flying activities, flying hours, other related records, documentation system, manuals etc, etc were not properly maintained or maybe non-existent.

10. The passengers were not properly manifested. Also the records shows that no valid insurance cover was available for the liability to passenger and aircraft.

11. In terms of regulatory oversight of the helicopter operations, this is not carried out by the Malaysian DCA as the helicopter is under the US registration.

12. It is regretted that confusion occurs as to the position of the helicopter after it was airborne that delays the SAR alerting procedures. The alerting system was only activated almost 2 to 3 hours after the last communication which was done through a passing MASwing aircraft. However the actual SAR started after the pilot reported to the ATC unit at 1216 that his helicopter had crashed into the river and 3 passengers were endangered for drowning.

    Para 6.4.2 of the MATS volume says: **Quote**: *Even though local knowledge or other factors may promote that all is well, controllers shall always declare the appropriate SAR phase as the first step of the SAR procedures unless there is positive knowledge that the occupants of the aircraft are safe. If necessary upgrade the SAR phase if the situation so demands.* **Unquote**

b. Causal Factors

The primary cause of the accident was due to the poor judgement by the pilot to take off despite the unfavourable weather condition.

There are three probable scenarios:

1. He was caught in the weather, while trying to avoid the cloud, he went below the clouds less than 200 feet during which he entered into a turn and got disorientated. As he was at very low altitude the main rotor blades struck the water and the whole helicopter went down.
2. The pilot entered the clouds during a turn to return to base, becomes disorientated and not realising that he was too close to the water, the helicopter went down without him noticing it and it hit the water.
3. The other possibility is that he was trapped in the weather and unable to move in the low level clouds. He then decided to do a controlled ditch and shut-off the engine on impact.

His poor decision to fly into the weather was likely due to pushing for time exposed him to lack of situational awareness, judgmental error.

4. SAFETY RECOMMENDATIONS

It is recommended that:

4.1 The company shall establish an improved method/procedure for operating in the region that includes when operating over long stretch of water and in bad weather situation.

4.2 The investigators need to examine the flight controls system for any abnormality upon recovery of the wreckage, should the wreckage be recovered later.

4.5 The Company should have proper office and set-up to run their helicopter operations. This needs to be verified by DCA flight operations before commencing of any of its flights.

4.6 The DCA Malaysia to extend its surveillance on all aircraft regardless of registration so long as is operating in Malaysia. The surveillance is necessary to ensure that the helicopter is equipped for its intended flights, the pilot is well qualified and the insurance coverage is available.

4.7 The DCA Malaysia should review its regulation to require all aircraft to be equipped with floatation devices and equipment when it intent to fly over large expense of water (such as across a wide river).

4.8 DCA should not approve Malaysian operator or owner to own and operate foreign registered aircraft unless it can be shown to the DCA Malaysia that it has complete control in terms of operations and maintenance and with valid insurance coverage.

4.9 The DCA Air Traffic Services which is responsible for the aeronautical alerting service/overdue action procedures need to be beefed up so that timely Search And Rescue (SAR) initiation is made as lives could be in danger and in need of immediate rescue.

Chief Inspector of Air Accidents
Ministry of transport
Malaysia

22 July 2013

Attachments:

ATC RADAR TRACK OF THE TRAFFIC AT KUCHING AIRSPACE ON 20 July 2013 BEFORE THE ACCIDENT

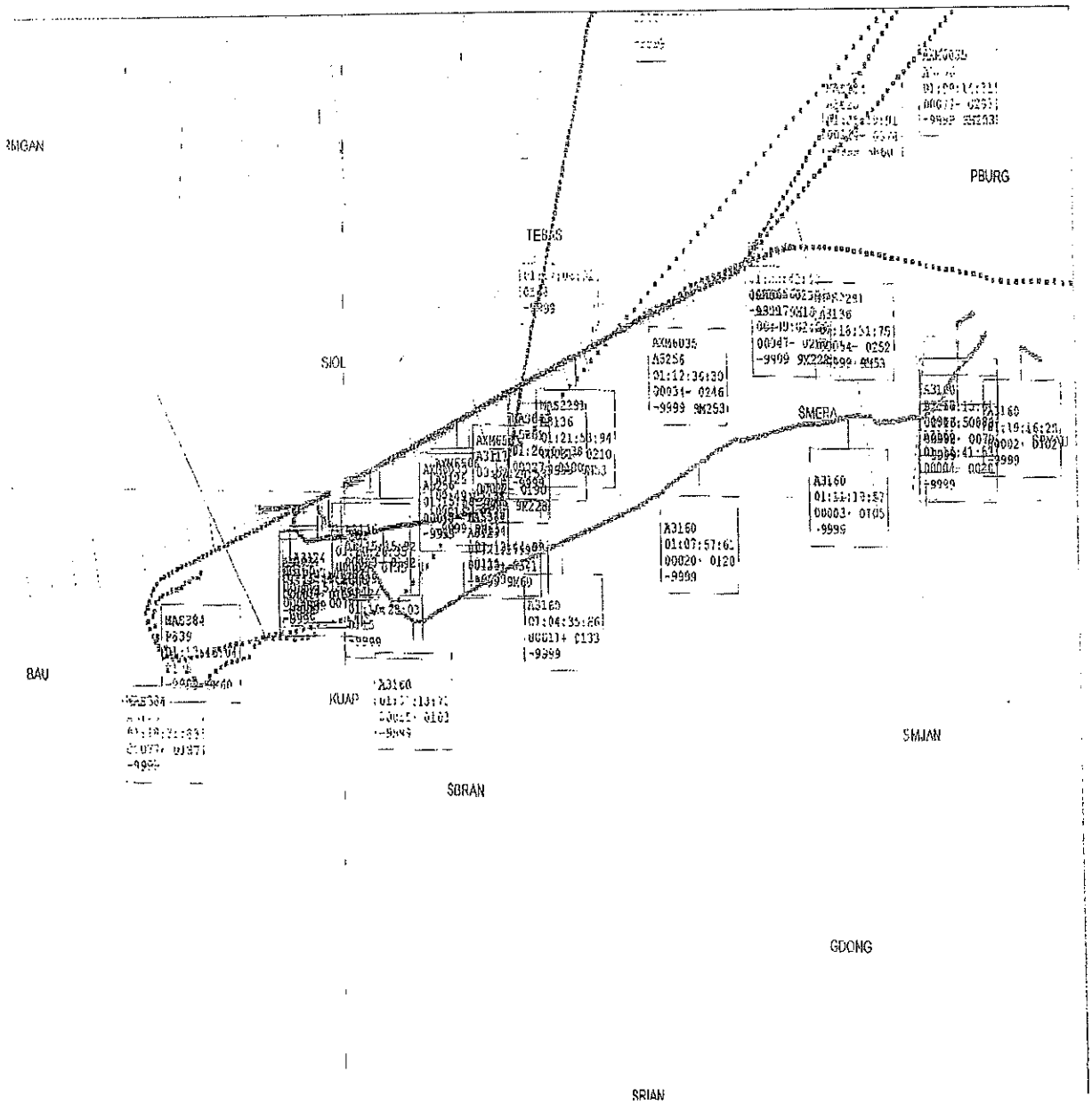
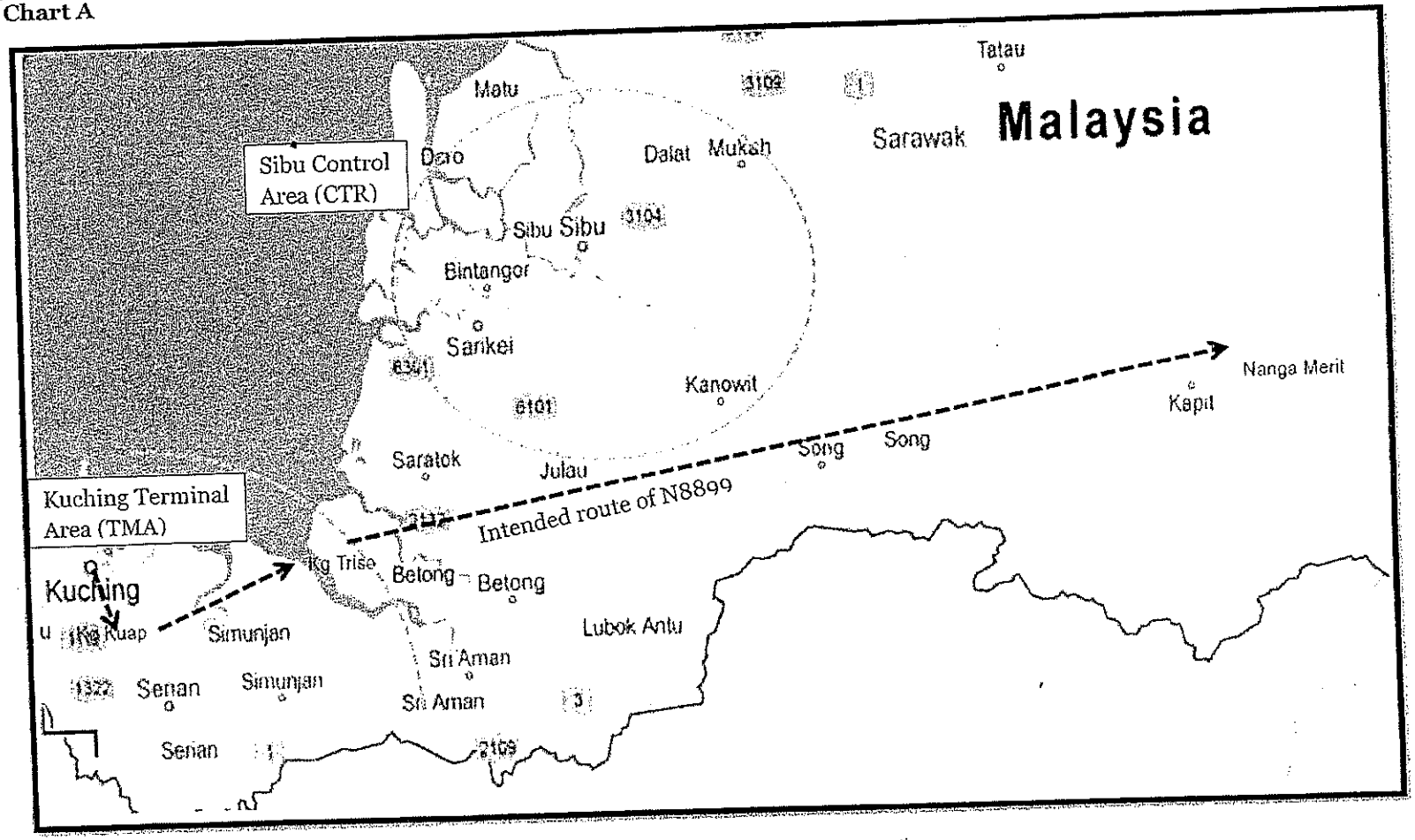


Chart A



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Department of Civil Aviation
Malaysia

(A)

Attachment A : Overdue Action – Radio Equipped Aircraft
(Extracted from Table 9-2.2 MATS Voulume I)

Preliminary Action	
Aerodrome	***ATSC***
Commence action not later than 3 minutes after a failure to report over the ETA for the reporting point.	*When an aircraft fails to make a position report when it is expected, commence action not later than the ETA for the reporting point plus 3 minutes*
Inform the ATSC Supervisor that the aircraft is overdue.	*Confirm ATD and time of last contact with preceding ATS unit if appropriate*
Confirm ATD with the departure aerodrome by the quickest means.	*Request information from other ATS units and likely aerodromes.*
Ensure that RQS message is sent	*Notify the RCC that the Uncertainty Phase exists*
	Ensure that RQS message is sent
Full Overdue Action	
Aerodrome	***ATSC***
Commence following actions if no news has been received following the Preliminary Actions or, 30 minutes has elapsed after the declaration of the Uncertainty Phase or, the fuel carried by the aircraft is considered exhausted	*Commence full overdue action not later than 30 minutes after the declaration of the Uncertainty Phase or when advised by the aerodrome that the aircraft is fully overdue.*
Notify the parent ATSC Supervisor that the aircraft is now fully overdue.	*Notify the RCC that the Alert Phase exists.*
	Notify the RCC that the Distress Phase exists if: i) 1 hour has elapsed beyond the last ETA for the destination; or ii) the fuel is considered exhausted; or iii) 1 hour has elapsed since the declaration of the Uncertainty Phase.

Air Traffic Inspectorate Division
Department of Civil Aviation
Malaysia

(B)

Attachment B
(Extract from MATS Volume I Part 9)

6.4 EMERGENCY PHASES AND NOTIFICATION TO RCC

6.4.1 Without prejudice to any other situation that may render the declaration of an emergency phase necessary or desirable, controllers shall declare the appropriate Emergency Phase on becoming aware of the following and shall notify the appropriate ATSC Supervisor who shall notify the RCC:

a) UNCERTAINTY PHASE (INCERFA):
i) no communication has been received from an aircraft for a period of 30 minutes after the time a position report or operations normal report should have been received or, from the time an unsuccessful attempt to establish communication with such aircraft was first made, whichever is the earlier; or
ii) an aircraft fails to arrive within 30 minutes of the estimated time of arrival last notified, or estimated by ATC; or
iii) doubt exists as to the safety of an aircraft and its occupants.

b) ALERT PHASE (ALERFA):
i) apprehension exists as to the safety of an aircraft and its occupants; or
ii) following the uncertainty phase the communications search has failed to reveal any news of the aircraft; or
iii) an aircraft has been cleared to land and fails to land within 5 minutes after the estimated time of landing and communication has not been re-established with the aircraft; or
iv) information has been received that the operating efficiency of the aircraft has been impaired to the extent that the safety of the aircraft in flight has been impaired but not the extent that a forced landing is likely; or
v) an aircraft is known or believed to be the subject of unlawful interference.

c) DISTRESS PHASE (DETRESFA):
i) there is reasonable certainty that an aircraft and its occupants are threatened by grave and imminent danger and require immediate assistance; or
ii) following the Alert phase, the aircraft fails to report or widespread communications checks and unsuccessful inquiries point to the probability that an aircraft is in distress; or
iii) the fuel on board is considered to be exhausted or to be insufficient to enable the aircraft to reach safety; or
iv) information is received which indicates that the operating efficiency of the aircraft has been impaired to the extent that a forced landing or ditching is likely;
v) information is received or it is reasonably certain that an aircraft is about to force land or ditch, or has made a forced landing or ditched or crashed; or
vi) information is received of a bomb warning concerning an aircraft in flight; or
vii) a report is received that an emergency radio beacon has been activated and its source cannot be verified, or other visual distress signals have been observed.

6.4.2 Even though local knowledge or other factors may promote that all is well, controllers shall always declare the appropriate SAR phase as the first step of the SAR procedures unless there is positive knowledge that the occupants of the aircraft are safe. If necessary upgrade the SAR phase if the situation so demands.

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