DEPARTMENT OF CIVIL AVIATION MALAYSIA

AIRCRAFT ACCIDENT

REPORT NO : 06/85

OPERATOR : MALAYSIAN HELICOPTER SERVICES BHD.

AIRCRAFT : TYPE : SA 330J PUMA

NATIONALITY : MALAYSIAN

REGISTRATION : 9M-SSG

DATE AND TIME OF ACCIDENT : 13TH DECEMBER 1985 AT 1115 LOCAL TIME

Note: All times in this report are local (+8 hours U.T.C.)

1. FACTUAL INFORMATION

1.1. History of the flight

On 13th December 1985 a Helicopter belonging to Malaysian Helicopter Services Bhd; a SA330J Puma bearing registration 9M-SSG, was being operated as a communication flight from Miri to Lutong, Parameswara, Bintulu, AB-1, Bintulu, TRO and Lutong. Except for Miri, Lutong and Bintulu airfields these locations were helipads made of metal frame built on oil rigs. On the day of the accident the helicopter arrived at Bintulu at about 10.45 hours. After an intermediate stop for refuelling, it departed for Temana 'E' at 1105 hours with eleven persons on board.

The weather on route was generally fine with wind velocity approximately 180°/8 knots. The helicopter set course on the heading of 280° and maintained a cruise level of 1500 feet above sea level. On approaching Temana 'E' approximately 5 NM from the helipad the crew carried out the approach check. Since this sector was flown by the First Officer (F/O) the Commander was briefed on the arrival procedures. On the final leg of the approach, the F/O noticed two emergency equipment boxes, located on the northern side of the landing pad. The F/O subsequently adjusted his approach so as not to overfly these obstacles. To achieve this, his final descent was made in the direction of 180°M. This provided him with a favourable into wind final approach. Passing 500 feet, the speed was noted to be 60 knots and it was claimed by the crew that they were on glide path, however moving slightly to the right for the purpose of avoiding the

.....2/-

1.3. Damage to aircraft

The aircraft was totally destroyed due to post impact fire.

1.4. Other Damages

The main rotor blades hit and damaged the helideck flooring from West to North, the wire netting and the eastern steps. The tail rotor only damaged an emergency equipment box.

1.5. Personnel Information

Commander	:	Male aged 50 years
Nationality	:	British
Licence	:	ATPL No. 174/H, valid until 31st. March, 1986
Helicopter ratings	:	Puma SA 330J S61N Wessex 60 Bell 212
Instrument Rating	:	Valid until 26th December 1986
Medical Certificate	:	Class 1 valid until 31st March 1986 on conditions spectacles to be available.
Cert. of Test	:	PUMA SA 330J 3rd December 1985
Flying Experience	:	Total all types : 7426 hrs Total Helicopter : 7196 hrs Total Puma SA 330J: 618 hrs Last 28 days : 28 hrs (approx.)

The Commander was also the base manager of the Malaysian Helicopter Services. He joined the company in September 1981 and was also a qualified flying instructor.

....4/-

On the day of the accident prior to the departure at Miri the flight was delayed by 30 minutes. On two separate occasions the flights were aborted due to technical reasons. 9M-SSG which experienced start up difficulties was subtituted by 9M-SSD. However, after airborne 9M-SSD encountered radio communication difficulties. Finally, 9M-SSG was again alotted for the flight after the crew including technical crew were satisfied with the serviceability state of the aircraft.

1.7. Meteorological Information

The weather at the time of the accident was generally good. Actual weather reported at Bintulu was as follows:-

Surface wind	:	Calm
Visibility	:	10 km or more
Clouds	:	1/8 CB 1500 NM-N
		2/8 1,800 FT
		2/8 15,000 FT
QNH	:	1011 MBS
Temp.	:	29°C

1.9. Aids to Navigation

Not applicable

1.10. Communications

No communications difficulties were reported.

....6/-

1.15. Fire

The helicopter burned severely during the post impact fire. According to witnesses the fire did not start until the helicopter came to rest. Although the ignition source was not determined, the fire started in the area of the left engine and spread throughout the entire fuselage.

1.16. Survival Aspects

Survivable.

2. ANALYSIS

2.1. General

It was clear that the direct cause of the accident was due to the tail rotor blade striking the equipment box which was located on the northern end of the platform. The investigation was therefore directed towards determining why insufficient clearance existed between the tail rotor and the equipment boxes during final stages of the approach.

2.2. Approach Profile

2.2.1. The final approach flown by the crew was high. This was probably due to the inability of the First Officer to appreciate the ideal perspective required for a normal approach as he was inexperienced on type.

....8/-

at the Northern edge of the platform which was adjacent to the staircase. These boxes measuring 28 inches by 36 inches and 28 inches by 30 inches respectively were used to store all the necessary fire fighting and crash equipment. 3 feet is the maximum obstuction height allowable in the 150^{o} sector, which the aircraft made its final approach.

2.3.2. The helideck was inspected once in every 6 months and the most recent inspection was done on the 7th August 1985. No hazard was noticed, though the inspectors were aware of the existence of the equipment boxes.

2.3.3. The Temana 'E' helideck, located approximately 20 miles from the coast, is an unmanned rig with a helicopter deck built on the highest point of the structure. This design does not provide any visual references to use as a guide in order to maintain the required alignment for an ideal approach.

2.4. Flight Supervision

2.4.1. The aim of the sortie was for the base manager to conduct an observation ride on the First Officer. Prior to the accident, it was observed that the First Officer performed with an above average ability in handling the helicopter. Though helipad operations was not performed prior to the accident it was noted that his approach and landing procedures at Bintulu were safe and sound.

....10/-

2.6. Aircraft Design

2.6.1. The attitude of the Puma during the final approach to the helideck is about $5^{\circ} \pm 8^{\circ}$ nose up. Due to the design characteristic of the aircraft, the floor section ahead of the pilot seats and the instrument console do not provide frontal and lower view. However, to have visual contact with the said view at all times the aircraft has to be cocked during the approach. Unfortunately, this cocking effect is at the expense of either the Commander's or First Officer's view depending on the direction of the cock.

CONCLUSION

a) Findings

i) The helicopter was fully certificated and airworthy to fly. There was no evidence to suggest any technical failure or malfunction in flight.

ii) The crew were properly licensed and experienced to conduct the flight. The First Officer was flying under the supervision of the Commander.

iii) The rate of descent was around 1500'/min. and attitude in excess of 15° just prior to the tail rotor strike.

iv) There was no evidence to suggest of incipient vortex ring state or engine compressor stall when excessive power was applied to recover from the high ROD.

....12/-

Safety Recommendations

It is recommended that:

1. MHS is to formulate maximum allowable rates of descent for all types of approaches and this is to be incorporated in the operations mannual to assist the crew in deciding subsequent actions.

2. All onstructions e.g. safety equipment box and railings on the platforms are to be removed and placed below the flight deck level for better margin of safety.

3. Base managers and executives involved in flying activities must be encouraged to maintain flying continuity without break of more than 7 consecutive days.

/hm.