

## AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/8573	
<b>Aircraft Registration</b>	<b>ZU-ETU</b>	<b>Date of Accident</b>	30 October 2008		<b>Time of Accident</b>	0830Z
<b>Type of Aircraft</b>	Sanka AK 1-3 (helicopter)		<b>Type of Operation</b>		Private	
<b>Pilot-in-command Licence Type</b>		Private Pilot	<b>Age</b>	40	<b>Licence Valid</b>	Yes
<b>Pilot-in-command Flying Experience</b>		Total Flying Hours	127.8		Hours on Type	83.2
<b>Last point of departure</b>		Nelspruit private heliport.				
<b>Next point of intended landing</b>		Nkorho Bush Lodge.				
<b>Location of the accident site with reference to easily defined geographical points (GPS readings if possible)</b>						
Sabi Sands Game Reserve						
<b>Meteorological Information</b>		Wind: 010°/±5 kts, Temperature: 28°C, Visibility: Good.				
<b>Number of people on board</b>	1 + 0	<b>No. of people injured</b>	0	<b>No. of people killed</b>	0	
<b>Synopsis</b>						
<p>The pilot flew the helicopter on a visual flight rules (VFR) private flight in daylight conditions from the Nelspruit private heliport to Nkorho Bush Lodge at Sabi Sands. The duration of the flight was approximately 0.7 hours, when the pilot suddenly experienced an in-flight engine failure and was committed to executing an autorotation landing in the Sabi Sands Game Reserve. Shortly after the pilot had carried out a successful autorotation landing, the hot exhaust gasses from the engine of the helicopter caused the dry grass to ignite. The pilot noticed that the grass around the helicopter had started to burn. The pilot attempted to stop the fire, but realised that the fire extinguisher installed in the helicopter was not serviceable. The fire spread to the helicopter, which also caught fire and burned. The helicopter was destroyed. The pilot sustained a minor injury.</p> <p>The cause of the engine failure was investigated. For this purpose, the help of the helicopter manufacturer was called in. The manufacturer concluded in their investigation, that the engine failure may have occurred due to inconsistent activity of the governor system, resulting in the engine r.p.m surging during flight.</p>						
<b>Probable Cause</b>						
<p>A forced landing due to inconsistent activity of the governor system during flight which resulted in a loss of rotor RPM. Helicopter destroyed by subsequent grass fire.</p>						
<b>IARC Date</b>				<b>Release Date</b>		

## AIRCRAFT ACCIDENT REPORT

**Name of Owner/Operator** : Nkorho Bush Lodge (Pty) Ltd  
**Manufacturer** : Aerocopter Ltd  
**Model** : Sanka AK 1-3  
**Nationality** : South African  
**Registration Marks** : ZU-ETU  
**Place** : Sabi Sands Game Reserve  
**Date** : 30 October 2008  
**Time** : 0830Z

*All times given in this report are Co-ordinated Universal Time (UTC) and will be denoted by (Z). South African Standard Time is UTC plus 2 hours.*

### Purpose of the Investigation:

*In terms of Regulation 12.03.1 of the Civil Aviation Regulations (1997) this report was compiled in the interest of the promotion of aviation safety and the reduction of the risk of aviation accidents or incidents and **not to establish legal liability**.*

### Disclaimer:

*This report is given without prejudice to the rights of the CAA, which are reserved.*

## 1. FACTUAL INFORMATION

### 1.1 History of Flight

- 1.1.1 On Friday morning, 30<sup>th</sup> October 2008, the pilot flew the Sanka AK 1-3 helicopter on a visual flight rules (VFR) private flight in daylight conditions. The helicopter took off from a private heliport at Renosterkop in Nelspruit at approximately 0745Z en route to Nkorho Bush Lodge in the Sabi Sands Game Reserve. During flight and after approximately 0.7 hours, the pilot experienced an engine failure and was committed to executing an autorotation landing in the Sabi Sands Game Reserve. The pilot carried out a successful autorotation landing at approximately 0830Z and exited the helicopter to conduct a visual inspection of the engine. The pilot only sustained a minor injury.
- 1.1.2 The pilot noticed that the dry grass near to the helicopter was starting to burn. He rushed to the cockpit, to fetch the portable fire extinguisher in order to stop the fire. The fire extinguisher was found to be unserviceable and there was nothing which the pilot could do to stop the fire from spreading. The helicopter eventually caught alight. The helicopter was destroyed by the fire.

## 1.2 Injuries to Persons

Injuries	Pilot	Crew	Pass.	Other
Fatal	-	-	-	-
Serious	-	-	-	-
Minor	1	-	-	-
None	-	-	-	-

## 1.3 Damage to Aircraft

- 1.3.1 The helicopter was destroyed by an ensuing fire that was initiated by hot gasses that set the grass alight.



Photo1: Shows the fire damage caused to the helicopter.

## 1.4 Other Damage

- 1.4.1 Other damage was caused to the vegetation in Sabi Sands Game Reserve.

## 1.5 Personnel Information

Nationality	South African	Gender	Male	Age	40
Licence Number	*****	Licence Type	Private Pilot		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	Flight Tests – Single Engine Piston.				
Medical Expiry Date	31 October 2008				
Restrictions	None				
Previous Accidents	None				

Flying Experience:

Total Hours	127.8
Total Past 90 Days	83.2
Total on Type Past 90 Days	83.2
Total on Type	83.2

- 1.5.1 According to the records held on the pilot's file at the SACAA, he received type conversion training from an Aviation Training Organisation (ATO). On completion of the training, the pilot submitted an application for the helicopter type (Sanka AK 1-3) to be included on his licence. The application was approved and type rating endorsed on the licence on 22 July 2008.

## 1.6 Aircraft Information

**Airframe:**

Type	Sanka AK 1-3	
Serial Number	0015	
Manufacturer	Aerocopter Ltd	
Date of Manufacture	2007	
Total Airframe Hours (At time of Accident)	93.0	
Last Annual Inspection (Date & Hours)	04 January 2008	5.2 hours
Hours since Last Annual Inspection	87.8	
Authority to Fly (Issue Date)	06 February 2008	
C of R (Issue Date) (Present owner)	12 December 2007 Nkorho Bush Lodge (Pty) Ltd	
Operating Categories	Private Operation Authority to Fly	

- 1.6.1 The owner/pilot had imported the helicopter from the Ukraine. The helicopter was registered and privately operated in Nelspruit area. On the morning the day of the incident, the pilot performed a pre-flight visual inspection to verify and satisfy himself as to the airworthiness condition of the helicopter prior to the flight. The pilot did not identify any anomalies and considered the helicopter to be in a serviceable condition.
- 1.6.2 There was approximately 50 litres of unleaded gasoline, grade 95 fuel carried on board the helicopter. There were no fuel-related anomalies identified in the investigation.

**Engine:**

Type	Subaru EJ 2.5
Serial Number	787148786337
Hours since New	93.0
Hours since Overhaul	TBO not reached.

- 1.6.3 The pilot experienced an in-flight power failure. He stated that the main rotor driving belts (P/N XPA 671532) slipped and as a result caused an engine speed governor failure.

## **1.7 Meteorological Information**

Wind direction	010°	Wind speed	± 5 kts	Visibility	Good
Temperature	28°C	Cloud cover	Clear	Cloud base	unknown
Dew point	unknown				

- 1.7.1 The weather information was submitted to the SACAA by the pilot. The weather was not considered to have been a contributing factor in the cause of this accident.

## **1.8 Aids to Navigation**

- 1.8.1 The accident happened at a location away from an aerodrome. No ground aids to navigation are relevant to this investigation.

- 1.8.2 The helicopter was equipped with standard navigation equipment. Other instrumentation and equipment were fitted in compliance with the equipment list of the helicopter. The pilot reported that there were no defects identified with the navigation equipment and that it was in a serviceable condition prior to the accident.

## **1.9 Communications**

- 1.9.1 The helicopter had an XCom – A760 type radio communication equipment installed. The pilot reported that there were no defects identified with the radio equipment and that it was in a serviceable condition prior to the incident.

- 1.9.2 The accident occurred at a location away from an aerodrome. The only communication facilities available to the pilot were the radio communication equipment which was installed in the helicopter.

## **1.10 Aerodrome Information**

- 1.10.1 The accident did not occur at an aerodrome but approximately 5 nm in a north-westerly direction from the Nkorho Bush Lodge in the Sabi Sands Game Reserve.

## **1.11 Flight Recorders**

- 1.11.1 The helicopter was not fitted with a Cockpit Voice Recorder (CVR) or a Flight Data Recorder (FDR) and neither was required by regulations to be fitted to this type of helicopter.

## **1.12 Wreckage and Impact Information**

1.12.1 The helicopter was landed successfully on an open grass covered flat area without sustaining any impact damage and was still intact. A veldt fire was subsequently ignited by the hot gasses from the engine exhaust which also caused the helicopter to catch alight. The helicopter was then destroyed by the fire. (See photo below)



Photo 2 Helicopter destroyed by grass fire.

1.12.2 The pilot experienced a power failure in flight, resulting in an autorotation landing.

## **1.13 Medical and Pathological Information**

1.13.1 The pilot survived the accident, sustaining only a minor injury.

## **1.14 Fire**

1.14.1 The pilot reported that the fire started after landing the helicopter and that the origin of the fire was the dry grass ignited by the exhaust gasses. The combination of helicopter plastic and fabric material, fuel carried on board and dry grass became a fuel source for the fire and the fire burned until the helicopter was destroyed. Due to the location of the accident site, there were no rescue fire services available to extinguish the fire. The pilot attempted to extinguish the fire with the portable fire extinguisher carried on board the helicopter. However, when he attempted to use it, he found it to be unserviceable.

## **1.15 Survival Aspects**

1.15.1 The accident was survivable as the pilot was properly restrained and no impact forces were sustained by the helicopter during the landing. When the fire started,



the pilot was already outside the helicopter. He moved away from the burning helicopter to a location of safety.

## 1.16 Tests and Research

1.16.1 The Idler Actuator operating rod was found moving freely in and out of the casing and not in accordance with the manufacturer's specification. Due to the identified operating defect, the Idler Actuator was disassembled. The following evidence was found:



Photo 3 shows the disassembled Idler Actuator

- (i) During the disassembly process, it was found that the Washer P/N: 04020400012 had seized approximately 10.5 mm into the Sleeve P/N: 0402040008. According to the Parts Catalogue of the helicopter, there should be three rubber Rings P/N: 036-039-19 installed on the washer. The rings may have perished for some reason, because there was only remaining fibre material left which was trapped between the two moving parts, thus causing the washer to eventually seize inside the sleeve.
- (ii) In order to verify the finding, the owners of two other helicopters (ZU-LAC and ZU-RIT) of the same type were requested to remove and also disassemble the idler actuators installed to their helicopters. There were similar findings, which identified serious concerns about the operation of the helicopter.

1.16.2 It was established that the Belt Tension Assembly P/N 04020400000 installed to the Main Rotor Gearbox Assembly P/N 04000000000 was not as per drawing illustration identified in the Illustrated Parts Catalogue (IPC).

1.16.3 The circumstances surrounding the serviceability of the fire extinguisher were investigated and the following evidence was found:

- (i) During an inspection of the helicopter by the SACAA, the pilot was advised by the inspectorate to have the fire extinguisher bottle "checked", which implied that it should have been tested or serviced.

- (ii) The owner/pilot complied by contracting a South African Company, based in Nelspruit. The fire extinguisher was then inspected in June 2008. The pilot witnessed that the fire extinguisher bottle was only visually inspected. A servicing record sticker was attached to the bottle to indicate the inspection intervals. The fire extinguisher bottle was returned back to service, having no pressure gauge installed. The pilot could not see what the pressure inside the bottle was. All instructions printed on the bottle were in a foreign language (UKRAINE).
- (iii) The manufacturer's comments in respect of the matter were that it was their fault that maintenance documentation did not include a fire extinguisher inspection. However, because the fire extinguisher service station is located in the Ukraine, the owners are advised to substitute existing fire extinguishers for new extinguishers, which the South African service stations would be capable of servicing. In short, they distanced themselves from the problem.

1.16.4 A factory technical team from the aircraft manufacturer visited South Africa on 17 December 2008, to inspect the helicopters currently registered and operating in the country. The purpose of the visit according to the manufacturer was to inspect, update and carry out necessary modifications to certain components of the AK 1-3 helicopters and bring them in line with current production specifications.

1.16.5 Based on the information given by the pilot, the technical team assessed the scenario of the engine failure as follows:

- (i) After the emergency landing of ZU-ETU (S/N 0015) and subsequent fire, the manufacturer's conclusion was that the engine had failed as a result of the unstable operation of the engine speed governor. This can occur, if the throttle lever of the governor actuator is reduced to a hand control throttle lever. If after activating the governor, the throttle handle is reduced too little, under some flight conditions, the governor will try to throttle back below the position determined by the throttle handle. This is when uncontrollable oscillations of the throttle by the governor will start.
- (ii) Additionally, with the engine speed governor engaged at the time, the governor would have attempted to maintain steady engine r.p.m and would have made the engine r.p.m oscillate high and low, causing the pilot's observation of the engine surging several times with the resultant slowly reducing rotor r.p.m. The manufacturer considers that the r.p.m surging of the engine was due to inconsistent activity of the governor system, resulting in the engine r.p.m surging during flight.

1.16.6 The manufacturer inspected and did not find any grooves on the engine drive pulley which should have been present if there was belt slippage. According to their assessment, the seizure of the tensioning device was caused by reduction in the fluorocarbon bushes inside the casing, which was as a result of the heat effect of the fire after the forced landing.



- (iii) However, subsequent to the seizure of the tensioning device, the manufacturer carried out modifications on all the helicopters, to eliminate the possibility of the problem recurring on the Idler Pulley Tension device. There were measurements taken and the evidence found indicated that the tight fit of the washer in the sleeve was causing scouring marks on the inside. The manufacturer then machined the items as follows:
  - (a) The operating rod shaft was machined and reduced by 0.10 mm to 13.90 mm diameter.
  - (b) The piston washer was reduced by 0.10 mm to 39.89 mm diameter.
  - (c) The end washer internal diameter hole was increased from 14.02 mm to 14.20 mm.
- (iv) To address the issue of the engine speed governor, the manufacturer immediately gave written instructions in a letter to all the owners that further use of the governor system in flight is prohibited.

## 1.17 Organisational and Management Information

1.17.1 The helicopter was privately operated by the owner/pilot.

1.17.2 The helicopter was maintained by an Approved Person (AP) which was appropriately authorised by the Aero Club of South Africa.

1.17.3 The incident was reported to Kruger Mpumalanga Air Traffic Control (ATC), which in turn followed procedure and reported the occurrence to the SACAA.

### Aircraft Manufacturer

1.17.4 The aircraft manufacturer was consulted and requested to assist in the investigation. In response to the call, the manufacturer decided to send representatives to South Africa (SA), who conducted inspections on all the Sanka AK 1-3 helicopters registered in SA. On completion of these inspections, the manufacturer submitted a technical report to the SACAA, explaining their findings and actions taken. (See 1.16, Test and Research for information on the technical report.)

### Regulatory Authority

1.17.5 The activities of the SACAA were reviewed during the investigation, to determine if there were any actions which directly or indirectly influenced the operation of the helicopter. In order to do a full assessment of the SACAA activities, the aircraft file was reviewed for evidence of any anomalies.

- (i) The problem was that the SACAA allowed a situation where the ATO continued with flight training without having in their possession a valid approval certificate. Upon verification, there was also no documentation done by its licensing department, prior to approving the application, to indicate that the pilot had complied with all requirements.
- (ii) The SACAA did not do any follow-up inspection or contact the owner to ensure that the anomaly of the fire extinguisher identified during their visit,

had been addressed. This process was especially important now since a finding concerning the fire extinguisher had been raised in a report to the owner.

#### Aviation Training Organisation (ATO)

- 1.17.7 The records of the ATO were checked during the investigation. The records at the regulator indicated that the last approval certificate expired on 30 June 2008. The ATO continued to operate, aware of the status of the certificate. The SACAA only returned to the ATO on 05 September 2008 to conduct a renewal audit and then issued the current approval certificate on 12 November 2008. The ATO operated for over four (4) months without having in their possession a valid approval certificate.
- 1.17.8 The pilot's type conversion training was completed on 22 July 2008, under the authorisation of the ATO approval certificate. Based on the information above in 1.17.7, the ATO did not have a valid approval at the time. They were authorised to provide type rating training only on (fixed wing) aeroplanes. The type conversion was done on a helicopter. The instructor who certified the type rating was also not included on the instructors' list of the ATO.

#### 1.18 Additional Information

- 1.18.1 The Pilots Operating Handbook (POH), Issue: 30 June 2006, Revision 3, which the pilot had in his possession, did not have any additional operational instructions on the engine speed governor. The only information available was the location of the governor power switch (page 22) and governor speed adjuster knob (page 62). Therefore there was no information available to the pilot of performance limitations, normal procedures and/or instruction for the use of the engine speed governor in the Pilot Operating Handbook (POH) published by the aircraft manufacturer.
- 1.18.2 There were several anomalies identified with the components or parts drawings in the Illustrated Parts Catalogue (IPC) of the helicopter. The manufacturer acknowledged the anomalies identified in the IPC and made amendments to that effect.
- 1.18.3 During the visit of the manufacturer's technical team to SA, all the Sanka AK 1-3 helicopters currently operating in SA were inspected and modifications were done to certain components with the purpose of bringing them in line with current production specifications. The following changes were done on each of the four helicopters:
- (i) Sprague clutch modification. The camshaft (P/N 04020100003) was machined off (0.05 mm) to prevent static electric arcing to the roller cage.
  - (ii) The 45 amp alternator was replaced and a 90 amp installed.
  - (iii) The exiting exhaust manifold was replaced with a new exhaust in compliance with the latest specification.
  - (iv) The starter relay circuit was updated.
  - (v) The engine control unit (ECU) software program was updated.
- 1.18.4 All the above modifications were done without consulting with the SACAA certification department.
- 1.18.5 In the initial stages of the investigation, a memorandum identifying all the anomalies found and safety recommendations was forwarded to the Commissioner.

## 1.19 Useful or Effective Investigation Techniques

1.19.1 None.

## 2. ANALYSIS

- 2.1 The pilot flew the helicopter on a visual flight rules (VFR) private flight in daylight conditions. The pilot experienced an in-flight engine failure and executed an emergency autorotation landing in the Sabi Sands Game Reserve. He landed the helicopter safely, but then noticed that the grass near to the helicopter had started to burn. In order to stop the fire, the pilot attempted to use the portable fire extinguisher installed in the helicopter but found the fire extinguisher to be unserviceable. He therefore had to watch from a safe distance as the helicopter caught alight and was destroyed by fire.
- 2.2 The wreckage was recovered to Nelspruit, where an investigation was carried out to determine the cause of the engine failure. The Idler Actuator was found to be defective. The Idler Actuator worked normally prior to the flight, during the engine start, ground check procedure and rotor engagement. The conclusion is that the Idler Actuator became defective either in flight or as a result of the fire damage. The two scenarios were widely reviewed and in both cases conflicting evidence came to the fore.
- (i) If the Idler Actuator had become defective in flight, the result could have been possible slippage of the drive belts. However, there was no evidence of grooves found on the drive pulley as would have been caused by the belts. There was also no evidence of fractures visible on the belts due to over-tensioning. For this reason, the evidence of slippage as a possible cause for the Idler Actuator becoming defective, was eliminated.
  - (ii) The manufacturer's comments in this regard were that the Idler Actuator seized due to decay or reduction in the fluorocarbon compound bushes inside the casing, which resulted from the heat effect of the fire. The manufacturer may be correct, but they could not explain the scouring/rubbing marks that were found on the inside of the casing. The presence of these markings is a clear indication that for some reason during the operation, the moving parts (washer and sleeve) clearance became restricted and this is probably why the ring on the washer was severely damaged.
  - (iii) However, indications are that the damage was not caused by the fire. The damage was clearly caused due to moving parts being subjected to operation in a very tight fit installation. This then also explained the reason for the subsequent modifications and machining down of the different parts of the Idler Actuators.
- 2.3 The pilot flew the helicopter with the engine speed governor engaged on the day of the accident. According to the manufacturer, in the light of the evidence, it is possible that the engine r.p.m started to surge due to the inconsistent activity of the governor system during flight. This would have resulted in that the governor would have attempted to maintain steady engine r.p.m and could have made the engine

r.p.m oscillate between high and low, with the result of a reducing rotor r.p.m. This could have been observed by the pilot as engine surging. Under the circumstances, the pilot had no other option but to perform the emergency autorotation landing.

- 2.4 The training and experience of the pilot was reviewed in the investigation, to determine if he had complied with all existing regulatory requirements. The evidence found indicated that the training of both Private Pilot's Licence (PPL) and type rating of the incident helicopter endorsed on the licence were completed at an ATO which did not have a valid approval certificate at the time. The ATO was also not authorised to provide training on helicopters. The pilot was totally in the dark about the situation, continued with training and was not aware of the potential risks involved. Oblivious of what had been happening, he submitted his applications to the SACAA for processing. Once received by the SACAA, there was no verification done on the information provided, to ensure that everyone involved was appropriately authorised to perform the duties stipulated on the forms.

The helicopter landed safely and the pilot sustained a minor injury. Shortly after landing, the pilot realised that the grass around the helicopter had started burning. Because there was no other possible source of ignition identified, it was concluded that the exhaust gas had caused the fire. The pilot attempted to prevent the helicopter from catching alight by attempting to use the portable fire extinguisher. However, the fire extinguisher bottle was unserviceable and there was nothing further that he could do, but to stand aside and watch from a safe distance as the helicopter caught alight and was destroyed by fire.

### **3. CONCLUSION**

#### **3.1 Findings**

- 3.1.1 The helicopter was privately operated by the owner/pilot.
- 3.1.2 The pilot flew the helicopter on a visual flight rules (VFR) private flight in daylight conditions.
- 3.1.3 The pilot had a valid Helicopter Private Pilot's Licence (PPL) and a Medical Certificate with no restrictions. The type rating of Sanka AK 1-3 was endorsed on the licence.
- 3.1.4 The helicopter was maintained by an Approved Person (AP) which was appropriately authorised by the Aero Club of South Africa.
- 3.1.5 The pilot experienced an in-flight engine failure and executed an emergency autorotation landing and landed the helicopter safely on the ground in the Sabi Sands Game Reserve.
- 3.1.6 The exhaust gas from the engine of the helicopter caused a veldt fire and the helicopter caught alight and was subsequently destroyed by fire.
- 3.1.7 The portable fire extinguisher in the helicopter was not in a serviceable condition.
- 3.1.8 The Belt Tension Assembly was not installed as per instruction of manufacture, captured in the illustrated Parts Catalogue (IPC), and/or the IPC used by the owner/pilot was out-dated.

- 3.1.9 The Idler Actuator was disassembled and evidence found indicated that the Washer had seized approximately 10.5 mm into the Sleeve.
- 3.1.10 The aircraft manufacturer found that the engine speed governor had started to surge due to the inconsistent activity of the governor system during flight. This could have been caused by the governor would have attempted to maintain steady engine r.p.m and would have made the engine r.p.m oscillate high and low, causing the pilot's observation of the engine surging several times with the resultant slowly reducing rotor r.p.m.
- 3.1.11 The Pilot Operating Handbook (POH) which the pilot had, did not contain any information on the governor.
- 3.1.12 The POH was not approved by the SACAA.
- 3.1.13 The helicopter had a valid Private Authority to Fly.
- 3.1.14 The Aviation Training Organisation (ATO) did not have a valid approval certificate and was not authorised to give helicopter training at the time when the pilot started and ended the Private Pilot's Licence and type conversion training on the helicopter.

## **3.2 Probable Cause/s**

- 3.2.1 A forced landing due to inconsistent activity of the governor system during flight which resulted in a loss of rotor RPM. Helicopter destroyed by subsequent grass fire.

### **Contributory factors**

- 3.2.2 The engine r.p.m most probably started to surge due to a defective idler actuator, which subsequently affected the operation of the governor system.
- 3.2.3 There was no information of performance limitations, normal procedures and/or instruction for the use of the engine speed governor in the Pilot Operating Handbook (POH) published by the aircraft manufacture.

## **4. SAFETY RECOMMENDATIONS**

- 4.1 It is recommended that the Commissioner should review the Type Acceptance approval in consultation with the aircraft manufacturer and establish a better working relationship between the two organisations, in order to ensure that all issues relating to continued airworthiness of the Sanka AK 1-3 helicopters are being addressed and completely implemented.
- 4.2 It is recommended that the Commissioner should communicate with the owners of South African registered Sanka AK 1-3 helicopters, to discontinue the use of the fire extinguishers supplied with the helicopter and replace them with serviceable fire extinguishers.

- 4.3 It is recommended that the Commissioner should review the standard of training received by the pilot, especially in the light of the fact that the ATO responsible for the training did not have a valid ATO approval and was not authorised to provide helicopter training.

## **5. APPENDICES**

- 5.1 Nil.

-END-

Report reviewed and amended by the Advisory Safety Panel  
26 May 2009