ROYAL AIR FORCE
INSTITUTE OF AVIATION MEDICINE
FARNBOROUGH HAMPSHIRE
GU14 6SZ

RAF IAM LETTER REPORT NO. 036/89

AN ASSESSMENT OF THE LIFEJACKET WORN BY A SURVIVOR FROM THE DITCHING OF G-BGKJ ON 25 APRIL 1989

(Project 95/07)

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An Assessment of the Lifejacket Worn by a Survivor from the Ditching of G-BGKJ on 25 April 1989

Reference:

Civil Aviation Authority Airworthiness Division. Specification No. 5 Issue 2 (1979). Specification for inflatable lifejackets.

INTRODUCTION

1. On the 25 April 1989 a Bolkow 105 helicopter (G-BGKJ) ditched in the sea 3.5 miles north of the Shetland Isles, following a double engine failure. The aircraft remained afloat allowing the pilot and observer on board to launch a liferaft. In the process of doing this the observer, who had not previously undergone in-water survival training, fell into the sea, the temperature of which was estimated to be 8°C. He immediately operated his lifejacket but only the left lobe inflated. However he was able successfully to board the liferaft during which time the lifejacket inflated fully. In contrast the pilot, who was survival trained, operated his lifejacket and then pulled open the velcro closures securing the stole as he knew this would aid full inflation. As a result of this incident the Air Accident Investigation Board requested assistance from the RAF Institute of Aviation Medicine in assessing the

performance of the lifejacket worn by the observer with respect to speed of inflation.

DESCRIPTION

2. The observer was wearing a Beaufort Mk 28 lifejacket. This consists of a single buoyancy chamber which can be inflated either manually from a 33g CO_2 cylinder by pulling a toggle or orally as required. When packed the lobes of the lifejacket are contained inside a cover secured along its entire length by velcro. Upon inflation the pressure exerted by the expanding stole releases the velcro fastening and allows the lifejacket to deploy fully. According to the specification at Reference this should occur within 10 seconds of initial operation.

METHODS

3. The performance of the lifejacket was assessed by measuring the time taken for full inflation of the stole to occur when tested under 3 different conditions:

a. In air at a temperature of 22°C.

b. In water at a temperature of 20°C.

c. In water at a temperature of 8°C.

In addition comparisons were made between having the stole cover secure or open prior to inflation.

RESULTS

4. When the lifejacket was operated in air at a temperature of 22°C full inflation of the stole was

achieved in 9.2 ± 1.4 seconds (mean of 4 tests). Deployment occurred, however, in two stages with the left-hand lobe inflating immediately followed by approximately a 4 second delay before the right-hand lobe inflated. In contrast, full inflation occurred in 2.8 seconds when the stole cover was opened prior to operating the lifejacket.

5. In water at 20°C full inflation was achieved in 2.5 ± 0.7 seconds (mean of 3 tests) with immediate deployment of the complete stole occurring.

6. In water at 8°C full inflation was achieved in 6.6 ± 0.7 seconds (mean of 4 tests). Once again deployment occurred in two stages with the left-hand lobe inflating immediately, followed approximately 4 seconds later by the right. When the stole cover was opened prior to inflation full deployment occurred in 1.7 seconds.

DISCUSSION

7. The results show that the time to achieve full inflation of the Beaufort Mk 28 lifejacket is within the requirements of the specification described at Reference. However inflation sometimes occurs in two stages with the right-hand lobe deploying approximately 4 seconds after the left. This is possibly due to the velcro closures on the stole covering being too effective as freeing these prior to operating the lifejacket can reduce inflation time from 9.2 seconds to 2.8 seconds. This is also

confirmed by the actions of the pilot who because of his experiences gained through survival training knew that full inflation of his lifejacket would be hastened by manually opening the stole covers. In contrast the observer who had been shown only a training video was alarmed to find himself in the sea wearing what he thought was a malfunctioning lifejacket.

CONCLUSIONS

8. An assessment has been conducted on a Beaufort Mk 28 lifejacket with regard to the time taken to achieve full inflation. This was found to be within the 10 seconds required by the Civil Aviation Authority Specification.

9. After operation of the lifejacket a delay of 4 seconds can occur before the right-hand lobe deploys.

RECOMMENDATIONS

10. It is recommended that:

a. During survival training all aircrew are made aware of the delay in inflation that can occur with the Beaufort Mk 28 lifejacket and also the benefits of manually opening the stole covers in order to overcome this.

b. An alternative method of securing the stole covers be provided.

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[redacted]
Environmental Sciences Division
for Commandant

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