GOVERNMENT OF AUSTRALIA DEPARTMENT OF TRANSPORT

AIRCRAFT ACCIDENT INVESTIGATION SUMMARY REPORT

Publication of this report is authorised by the Secretary under the provisions of Air Navigation Regulations 283 (1)

Reference No: AS/753/1039

1 LOCATION OF OCCURRENCE

	Height a.m.s.l.	Date	Time (Local)	Zone
[illegible]e kilometre south-east of Brim, Victoria	300 feet	5.10.75	1730 hours	EST

2 THE AIRCRAFT

Make and Model: Rogallo Kites, 'Dolphin' Hang Glider/Tow Kite

3. CONCLUSIONS

(i) At about 1730 hours EST on 5 October, 1975, a hang glider which was being operated as a towed kite sustained a structural failure in flight and crashed on a farm property near Brim, Victoria. The kite was under tow by a motor car at the time of the occurrence. The pilot was killed and the kite virtually destroyed in the accident. There was no injury to any other person and no damage to property.

(ii) The pilot was Alastair Hugh Thomson, aged 29 years. Since about 1969 he had regularly engaged in the sport of flying manned kites towed behind boats.

(iii) The hang glider had been purchased new by the pilot some two months prior to the accident and was of the Rogallo type. 'Rogallo' is a generic term used to describe a class of aircraft consisting of a delta [illegible]aped sail supported on a frame, usually constructed from aluminium tubing. The aircraft in this case was [illegible]ended for the dual purpose of towed launching (kiting) and for hang gliding. The manufacturer had therefore strengthened the basic design for the purpose of accommodating the higher aerodynamic loads which may be encountered when such an aircraft is being towed.

(iv) During the period of his ownership of the hang glider, Mr. Thomson had gained some experience in the self launching free flight role and he had also operated it under tow behind a boat.

(v) The tow rope used for launching and towing was 84 metres long and was divided into a 'V' shaped bridle at the kite end. Attachment of the rope to upper and lower points on the control bar was intended to [illegible]ntrol to some extent the attitude of the kite and the height to which it would rise on tow. The correct [illegible]equence of operation for the kite to rise to its maximum tow height would require the upper line of the 'V' to be released first. The tow rope releases were actuated by the pilot through two hand levers fitted to the control bar.

(vi) On 4 October, Mr. Thomson completed six flights near Katyil, Victoria, during which the kite was towed to height behind a utility truck driven only in second gear. This was his first experience of being towed by a motor vehicle. The driver on this occasion had frequently acted as driver or observer while a kite flown by Mr. Thomson was towed behind a boat. While landing after the second flight on this day, Mr. Thomson fell and the hand lever controlling the upper tow rope release was broken. The remainder of the flights were [illegible]ertaken with the tow rope being attached to the lower tow hook only. The pilot later made repairs to the broken lever.

(vii) At about 1700 hours on 5 October the kite was prepared by Mr. Thomson for a towed flight over a paddock at the property at Brim. A sedan car fitted with a manual gear change and driven by Mr. John Thomson, the brother of the pilot, was to be used as the tow vehicle. The driver had had experience in towing manned kites behind boats but he had not previously driven a car for that purpose. Four very young children accompanied him in the car but there was no person capable of observing and monitoring the flight other than the driver himself.

(viii) The weather was fine with a north-easterly wind of about eight knots at ground level, probably increasing to about ten knots at 200 feet above the ground.

(ix) The pilot briefed the car driver to accelerate the car positively in first gear and then to change to second gear, aiming for a towing speed of about 30 miles per hour into the wind. After taking up the slack in the tow rope, the tow began and the driver accelerated rapidly in first gear. He saw the kite become airborne and [illegible]mmence climbing. After travelling for about 85 metres the driver changed to second gear and some [illegible]omentary wheel spin occurred at this point in the tow. He then leaned out through the car window and on looking back saw that the kite structure had collapsed and there was a substantial tear in the sail. The kite descended rapidly from a height estimated to be between 150 and 200 feet and struck the ground some 30 metres to the left of the path followed by the car. The car driver stopped the vehicle 115 metres from the point at which the tow had commenced. After releasing the rope from the car he drove some 80 metres back to the kite and found that the pilot had been killed.

3. CONCLUSIONS (Cont'd)

(x) The upper connection of the tow rope to the kite is designed to be released in two stages, which allows for the upper rope to increase slightly in length as the tow progresses and the kite attitude changes. The first stage of release had been accomplished and the tow rope was still connected to the kite at this point by the second and longer loop. The release lever had failed at the point at which it had been repaired but it could not be established whether it had failed in flight or on impact with the ground. The lower connection of the tow rope had been released.

(xi) No evidence of defective material or construction was found in the kite structure. The tubular frame failed initially either by upward and inward bending of the rear section of the leading edges or by upward buckling of the keel forward section. The failure was initiated by high in-flight loads imposed either via the tow rope and/or by an abnormal flight manoeuvre.

(xii) There is evidence that the hazards of towing manned kites by car and over land are well recognised by highly experienced kite fliers. Published information on the subject emphasises the dangers of the high loads which may be encountered by a towed kite. It is also generally recommended that an experienced observer be carried in any car towing a kite.

4. OPINION AS TO CAUSE

The cause of the accident was that the kite was subjected to loads in excess of its structural strength, probably as the result of inadequate operating procedures.

Approved for publication	(I.M. Leslie) Delegate of the Secretary	Date 21.4.1976