

AIR SAFETY INVESTIGATION REPORT REVIEW

Aircraft Type - Registration "Mini Stinger" File Reference 6/762/1508

Place and Date Lake Macquarie, NSW. 6/4/76 Investigator J. Adams

INVESTIGATION

Operations - Engineering - Aviation Medicine -

- The wreckage examination has apparently been very shallow and there is no report of this. Structural in flight failures require carefully documented observations and analysis. Possibly, tube should have been tested for material spec., also cut to check for corrosion.
- Technical data on glider incomplete and confusingly documented. (See pages 18 & 19.) Summary refers to "mini stinger". P18 has picture of "Delta Glider" with manuscript "Stinger" written above. P19 refers to "mini stinger". Is there any difference? A statement from manufacturer of materials used would have sufficed. (With diagrams of course). Tube materials, diameters, wall thicknesses, cable diameter's, material etc.
- Witnesses not probed in areas of great interest. Pilot was

REPORT

Evidence Presentation

glider attitude immediately prior to failure, was there anything unusual on the climb, out, what was climb out gradient on this flight? (Summary says 45° but no evidence in report to support this.) Did Mini men notice any abnormal rope tension? (By change in line seg.)

(a) There is no sequence of events.

(b) No diagram of take off area - accident location.

Analysis (i) Insufficient analysis of wreckage damage. (Would appear to be difficult to do without detailed report.)

(ii) Discussion of Hayes statement on P15, concerning use of a shorter rope and hazards of longer rope. In my opinion the explanation given does not stand up to scientific analysis. The climb angle on a shorter rope could be similar, but of shorter duration. The climb angle would in fact be controlled by the pilot in both cases. I.e. more nose up - steeper climb. A similar argument could be put forward for speed. With a longer rope the temptation would be there, as there is more time, to steepen climb and increase speed.

(iii) The discussion does not form an adequate basis for probable cause concerning inadequate operating procedures. (This may well be correct, but is not properly led up to.)

CA Form 149A

CONTRADICTIONS A. There is evidence that pilot had engaged in sport for 18 months but not to support "regularly" as stated in concl. 2. (Last days activities 6 weeks earlier.)

B. The evidence concerning which wing was seen to collapse is not clear.

CAUSAL FACTORS

It is true that no pre-existing defects were found but I doubt we should be saying so as I do not think the investigation in this area was thorough enough.

D. Section 3 of the conclusions does not logically lead up to the cause, inadequate op'ty. procedures aspect. It could be interpreted that poor tow boat crew procedures is what is meant by this but there is no real evidence to show that this was so.

Date 27/10/76 Signature C.J. Gougherty SFC2



AIRCRAFT ACCIDENT INVESTIGATION SUMMARY REPORT

SI/762/1508

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

1. LOCATION OF OCCURRENCE

Lake Macquarie, New South Wales	Height a.m.s.l. Sea level	Date 16.4.76	Time (Local) 1445	Zone EST
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2. THE AIRCRAFT

Make and Model Moyes 'Mini Stinger' Hang Glider/Tow Kite	Registration -
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3. CONCLUSIONS

- (i) At about 1445 hours EST on 16th April, 1976, a Moyes 'Mini Stinger' Hang Glider/Tow Kite sustained a structural failure in flight and crashed into the waters of Lake Macquarie, New South Wales. The kite was under tow by a motor boat at the time of the occurrence. The pilot suffered fatal injuries and the kite was severely damaged in the accident. There was no injury to any other person and no damage to property.
- (ii) The pilot was Peter Brian COOCHIROFF, aged 29 years. He had been engaged in the sport of towed ski-kiting for some 18 months prior to the accident.
- (iii) The kite had been borrowed from Mr. Moyes, the manufacturer, by a group of enthusiasts which included Mr. Coochiroff. The intention was to fly the kite during the Easter weekend, so that the group could assess its suitability with a view to possible purchase of a similar type. The kite was of the "Rogallo" type, consisting of a delta shaped sail supported by a frame constructed from metal tubing. A transversely mounted cross tube was attached to the central and leading edge tubes by bolts, holding the tubes in position such that the leading edge tubes formed a nose angle of about 109 degrees. The kite had been manufactured for use as both a free flight hang glider and a towed kite.
- (iv) The tow rope used for launching and towing was 8 millimetre mono polyethylene with a published breaking strain of 697 kilograms. The rope was attached to the kite at the tow point which was at the bottom of the "A" frame. The tow line could be released by the pilot by means of a hand operated lever fitted to the "A" frame. A further release was fitted at the aft end of the tow boat for use the observer.
- (v) The tow boat was a 16 foot "Ramsay Rebel" speedboat incorporating a 350 horsepower inboard engine. The steering and speed of the boat were controlled by the driver, while the observer sat at the rear facing the kite and holding the boat release. The driver and observer each had about 18 months experience in towed kiting.
- (vi) On 16th April Mr. Coochiroff had completed a number of flights and had doubled as boat driver while other members of the group flew the kite. During this period experiments were carried out using various lengths of tow rope until finally a length of 152 metres was employed.
- (vii) The weather was fine with a surface wind of about 10 knots from east-north-east.
- (viii) On the last planned flight before a luncheon break Mr. Coochiroff was piloting the kite in free flight and landed in the water some distance from the beach where friends awaited. He hailed the boat and requested another towed launch, indicating to his companions that he would make the beach on this occasion. The tow rope was attached to the kite and the boat moved off into wind, away from the beach, accelerating to a surface speed of about 17 knots. The kite became airborne very quickly and commenced climbing at an angle estimated to be about 45 degrees. At a height of between 200 and 300 feet, while still climbing, one side of the kite appeared to collapse. The kite entered a spiral to the left, descending rapidly to the water with the tow rope still attached.

3. CONCLUSIONS (Cont'd)

(ix) Examination of the damaged kite revealed that a buckling failure had occurred to the cross tube approximately mid-way between the centre tube and the port leading edge. The evidence indicated that this was the initial failure, which ^{then} allowed the port leading edge tube to collapse inwards, and led to the uncontrollable descent. The cross tube failure was due to an encounter with high in flight load forces.

(x) During towed flight, particularly when the angle between the tow line and the kite reaches large values, kites can be exposed to very high load situations, sufficient to result in structural failure. A commonly used device which exerts forces to hold the kite at a lower angle with respect to the tow line, is the climb restricting 'V' bridle. Such a device was not used on this occasion. Recommended practice is for boat driver activities to be confined to steering while the observer is provided with a throttle control in a position which permits the person to face rearwards and be able to also operate the tow release. Should the observer detect a hazardous tow situation is developing he is able to assist by carefully reducing boat speed. The observer did not have access to a throttle control on this occasion.

4. OPINION AS TO CAUSE

The cause of the accident was that in flight the kite was subjected to loads in excess of its structural strength. From the available evidence it has not been possible to identify the precise circumstances which led to this high load being imposed but it is probable that ^{it was} ~~the high loading~~ was associated with inadequate procedures adopted by the pilot and the boat crew.

Approved for publication

Delegate of the Secretary

Date