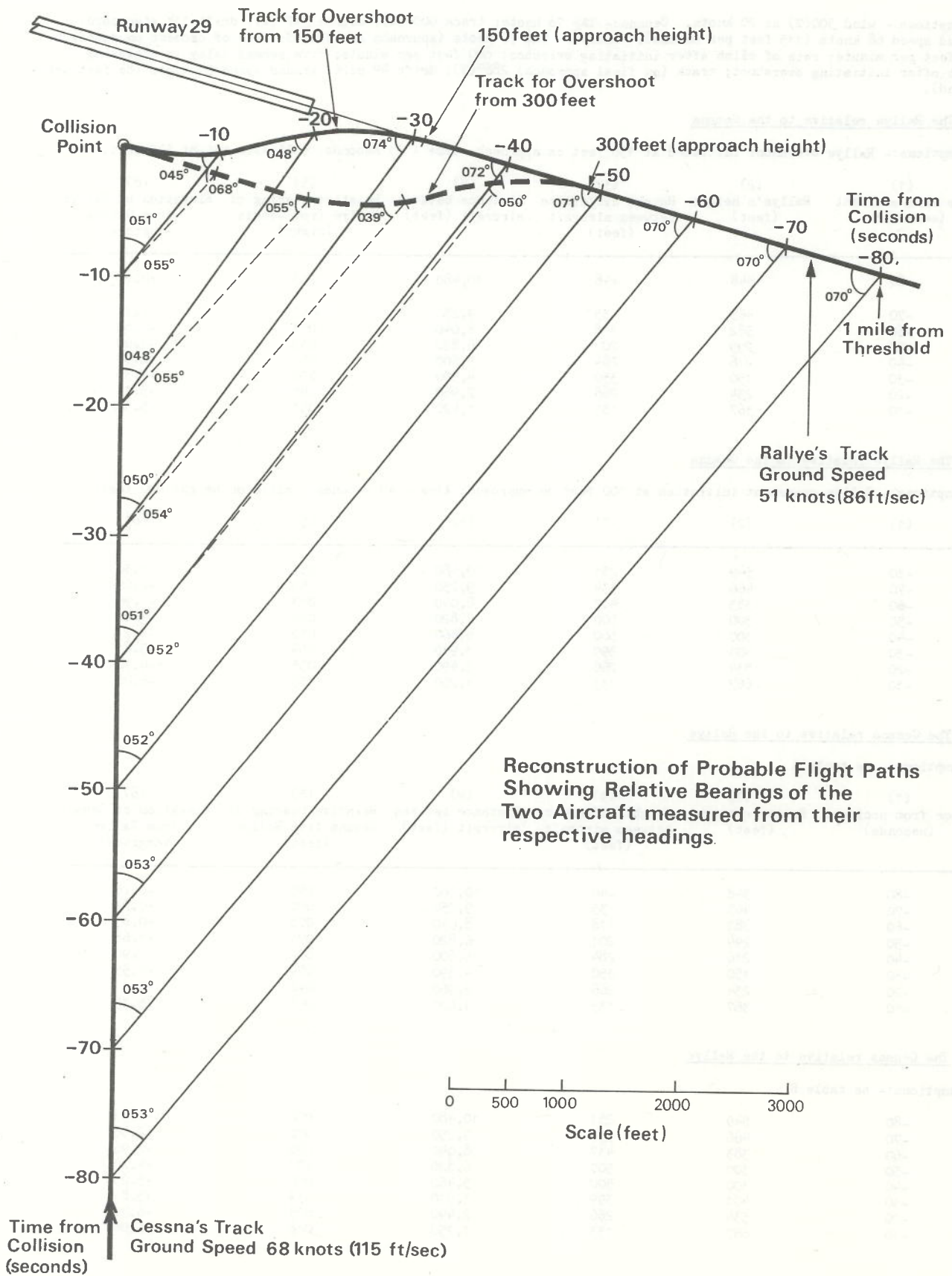


**Biggin Hill 25 Nov 1978
Circuit Schematic
(Not to Scale)**

Estimated disposition of aircraft
in the circuit at the time of the
mid-air collision

- +** Aircraft in the air
- Aircraft on the ground
(both were flying immediately
ahead of the Rallye and landed
just before it started to overshoot)



Tables showing the calculated relative bearings and elevation of each aircraft from the other at 10 second intervals

Assumptions:- wind 300(T) at 20 knots. Cessna:- TAS 78 knots; track 000°(T); course 347°(T); drift 13° starboard; ground speed 68 knots (115 feet per second). Rallye:- TAS 70 knots (approach and climb); rate of descent on approach 500 feet per minute; rate of climb after initiating overshoot 800 feet per minute; five second delay in achieving climb after initiating overshoot; track (on final approach) 286°(T); drift 4° port; ground speed 51 knots (86 feet per second).

A. The Rallye relative to the Cessna

Assumptions:- Rallye overshoot initiated at 150 feet on approach, time - 31 seconds; collision height 500 feet.

(1) Time from accident (seconds)	(2) Rallye's height (feet)	(3) Height difference between aircraft (feet)	(4) Distance between aircraft (feet)	(5) Relative bearing of Rallye from Cessna (right)	(6) Elevation of Rallye from Cessna (degrees)
-80	548	+48	10,480	053	+0.26
-70	465	35	9,250	053	-0.21
-60	382	118	8,040	053	-0.83
-50	299	201	6,820	052	-1.68
-40	216	284	5,600	051	-2.90
-30	150	350	4,390	050	-4.55
-20	234	266	2,960	048	-5.13
-10	367	133	1,420	051	-5.35

B. The Rallye relative to the Cessna

Assumptions:- Rallye overshoot initiated at 300 feet on approach; time - 48 seconds; collision height 800 feet.

(1)	(2)	(3)	(4)	(5)	(6)
-80	549	251	10,480	053	-1.36
-70	466	334	9,250	053	-2.06
-60	383	417	8,040	053	-2.96
-50	300	500	6,820	052	-4.20
-40	300	500	5,460	052	-5.23
-30	401	399	3,910	054	-5.81
-20	534	266	2,490	055	-6.10
-10	667	133	1,250	055	-6.06

C. The Cessna relative to the Rallye

Assumptions:- as table A

(1) Time from accident (seconds)	(2) Rallye's height (feet)	(3) Height difference between aircraft (feet)	(4) Distance between aircraft (feet)	(5) Relative bearing of Cessna from Rallye (left)	(6) Elevation of Cessna from Rallye (degrees)
-80	548	-48	10,480	070	-0.26
-70	465	35	9,250	070	+0.21
-60	382	118	8,040	070	+0.83
-50	299	201	6,820	071	+1.68
-40	216	284	5,600	072	+2.90
-30	150	350	4,390	074	+4.55
-20	234	266	2,960	048	+5.13
-10	367	133	1,420	045	+5.35

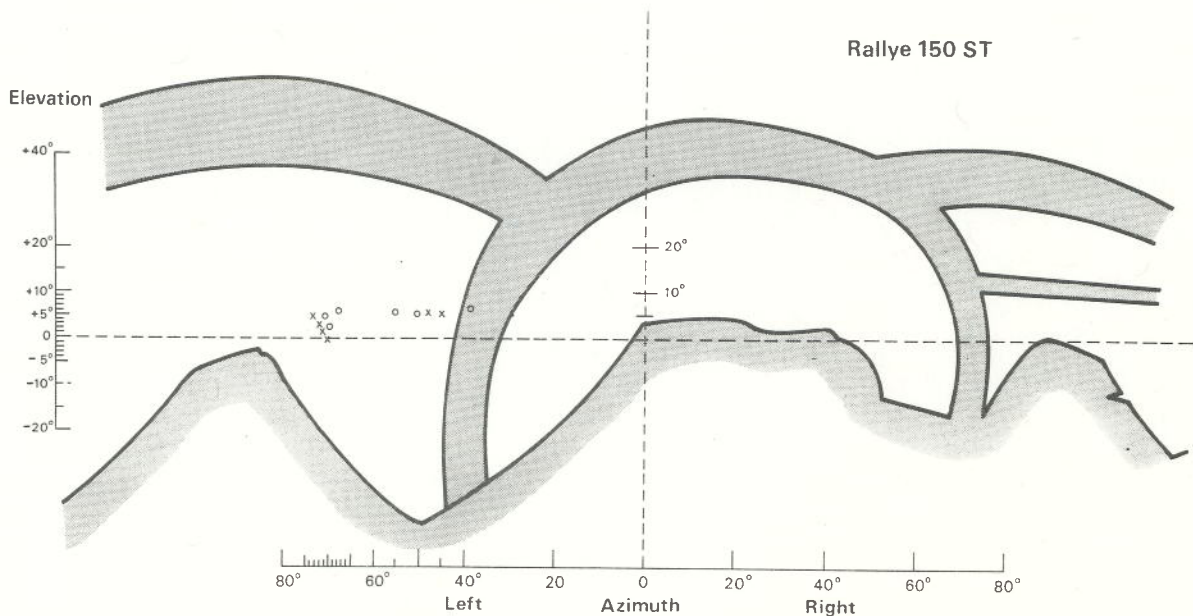
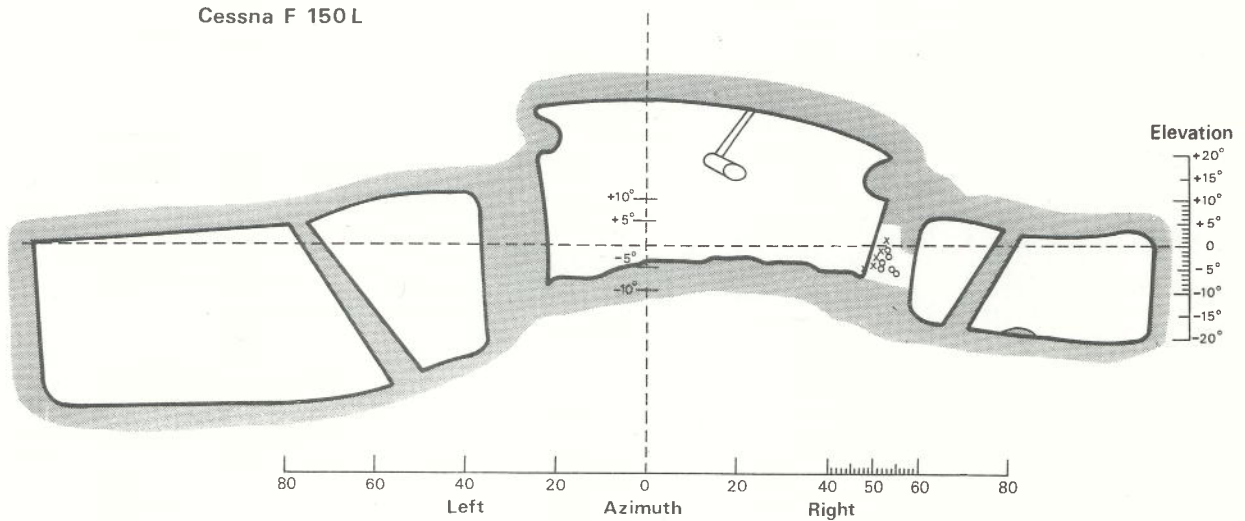
D. The Cessna relative to the Rallye

Assumptions:- as table B

-80	549	251	10,480	070	+1.36
-70	466	334	9,250	070	+2.06
-60	383	417	8,040	070	+2.96
-50	300	500	6,820	071	+4.20
-40	300	500	5,460	050	+5.23
-30	401	399	3,910	039	+5.81
-20	534	266	2,490	055	+6.10
-10	667	133	1,250	068	+6.06

Cockpit visibility diagrams from left seat of Cessna F 150L and Rallye 150ST

- 1 Diagrams are for a mean eye position and do not include allowances for binocular or head turning effects.
- 2 Azimuth origin is a plane through the pilot's mean eye position and parallel to the aircraft's fore and aft axis. Elevation angles are relative to the horizontal.
- 3 Estimates are based on theodolite measurements taken on similar aircraft set up on the ground in representative flight attitude relative to the horizontal.
- 4 For the Cessna the diagram represents estimated visibility in straight and level flight at 90 mph.
- 5 For the Rallye the diagram represents estimated visibility in moderate climb (at approximately 11° fuselage pitch).
- 6 Part of the Rallye diagram (not relevant to the accident) has been generalised because of practical difficulties in obtaining accurate measurements.
- 7 The symbols (x and o) on these diagrams indicate the estimated positions of the other aircraft at various times before the collision (see tables Appendix 4).



x Indicates other aircraft's estimated position if overshoot assumed to have occurred at 150 feet
 o Indicates other aircraft's estimated position if overshoot assumed to have occurred at 300 feet

