FINDINGS INTO THE DEATHS OF

JOHN GUTHRIE AND NEVILLE SMITH

Introduction

John Guthrie and Neville Smith, despite some difference in their ages, had been good friends for many years. A major basis of that friendship was their mutual interest in flying, and in particular in Ultralights. In August 2004, John Guthrie bought a second hand Sting Ultralight from a Michael Coates, who imported the first of these in to Australia from the Czech Republic, for a little over $100,000. Neville Smith had previously owned a Sting Ultralight which he had purchased from Michael Coates, although he had sold it and was awaiting the arrival of a second model also purchased through Michael Coates.

On 6th January, 2007, at 2.15 pm, the two men set out for a short flight from Goulburn Airport in John Guthrie's Sting TL 2000, a two seater recreational aircraft. . Although it is not certain, as no one actually witnessed their taking off, it is most likely from evidence regarding the radio call on take off, that JG was the pilot, with NS as his passenger. The aircraft had dual controls. Almost precisely one hour later, it impacted with the ground at 'Collingwood', a property near Gunning, and both John Guthrie and Neville Smith died as a result. The time is able to be pinpointed by evidence from eye witnesses, the Edwards, and Mrs Granger, all local property owners who saw the plane indicating signs of trouble, and its flight path, combined with evidence from the plane's tachometer , the aircraft operations log maintained by JG and Avdata records relating to radio calls made from the aircraft as it prepared to take off from Goulburn airport.

The Officer in Charge of this inquest, Detective Senior Constable Dean Roberts, prepared a particularly helpful and comprehensive brief for our assistance, and over ten days, evidence was heard from more than twenty witnesses, both expert and lay, and over forty physical and documentary exhibits were received and explained.

As required always under s 22 of the Coroners Act (1980), there are straightforward findings to be made as to the time, date, identities and cause of death of each of the two men. I accept that there was persuasive and compelling evidence identifying the date and time of impact, and the autopsy reports confirm that the injuries suffered by both Mr Guthrie and Mr Smith would have resulted in instantaneous death at that time. It was therefore, as is so often the case, how and why that catastrophe occurred, that is, the Manner of death, which was the primary issue investigated by the court throughout this inquest. The possibilities, including pilot error, lack of maintenance and mechanical failure were examined in detail. Ancillary to these considerations has been the related documentation of registration of the aircraft in Australia and the maintenance of documentary records as to servicing, maintenance and repairs.

Pilot error-skills and training

Mr Guthrie was 69, and Mr Smith 54. Both men were highly regarded and respected in local aviation circles and their wider community. Both were keen participants in recreational flying and skilled and well-regarded pilots, JG with almost 50 years as a licensed general aviation pilot, and NS with about 8 years. Neither had any adverse medical condition that might have affected their ability to fly. Both had recently been successfully examined by the Chief Flying Instructor at Goulburn, Ms Miller, for their Bi-annual flight reviews, and she gave strong detailed evidence confirming each man's high degree of competence.

Both men also clearly had a commitment to safety and that of the aircraft. No legitimate criticisms were made by any witness of their skills or attention to safety. In particular, JG was meticulous in his record keeping, as is clear from his Operations Log, his diaries and his notebook.

Although there is no absolute certainty as to who was piloting up to the time of the impact, we do know that JG was the designated pilot and in the pilot's seat. However

these were men who would have co-operated with each other in every way in any emergency. As has been repeatedly stated throughout this inquest, they were friends.

The aircraft

The aircraft was a Sting TL 2000 ultralight fitted with a Rotax 912 ULS engine and a Woodcomp electrical in-flight adjustable propeller.

At the date of the accident, the aircraft was registered in JG's name with Recreational Aviation Australia (RA Aus) bearing registration number 24-3770. RA-Aus is the organisation responsible for administering the recreational area of the aviation industry in Australia, which includes among other aircraft, ultralights. JG had purchased the aircraft from Michael Coates in August 2004. Michael Coates had previously imported the aircraft new from the Czech Republic in February 2002. It was the first TL 2000 Ultralight aircraft imported into Australia (along with another aircraft imported at the same time which was wholly destroyed as a result of an accident on its maiden flight in Australia) and had been used by Mr Coates primarily as a demonstrator aircraft.

I will have more to say about the history of the aircraft prior to its purchase by JG a little later in these reasons.

Maintenance

The records kept by JG reveal that he had constant problems with the aircraft after purchasing it from Mr Michael Coates on September 1 2004. These problems are corroborated by others, including Mr Coates and his friend and associate Mr Allen.

Initially, JG's concerns focused on the Woodcomp electrical adjustable aircraft propeller and vibrations that appeared to emanate from it. The Operators Manual for the prop, dated March 2001 and updated in Feb 2005 notes that 'it is advisable

to have a manifold pressure measuring system to allow proper control of the engine function' (although this wording was somewhat lost in its translation. The differences between the manuals and the translations reflect the difficulties which can attach to the

importation of aircraft from foreign countries, and the interpretation of their relevant instructions and manuals)

On September 21, 2006, JG had the prop inspected and balanced by Mr McCarthy, a Licensed Aircraft Maintenance Engineer (LAME), who was then the manager of an aircraft maintenance centre at Albion Park. Mr McCarthy explained in detail to the court the procedures he adopted to balance the prop. Extraordinarily, when he removed the weights attached to the prop upon arrival, its balance improved. In his experience this was abnormal. He then proceeded to achieve what he thought the optimum balance, to within a tolerance of 0.2 inches per second.

JG advised Mr McCarthy later that the prop appeared to have been well balanced and that he was more than satisfied with the job.

The evidence revealed the probability that the problems as to vibration were inadvertently attributed to the propeller being out of balance. As it turns out, this does not appear to have been the actual source of the problem. Mr Brian Nicholson, an aviation consultant, now retired, but still a LAME, stated that the adjustments to the prop potentially masked the true source of the vibration, namely, torsional twisting of the crankshaft, which was revealed to be out 15 degrees. Consistently, Mr McCarthy's evidence that unusually the balance improved when he removed the weights also suggests that the propeller was not the cause of the imbalance.

What is very clear is that throughout the nearly 2 ½ -year period of JG's ownership of the aircraft, he was diligent in ensuring, and recording, all required servicing, and all necessary maintenance including constant attempts to address any deficiencies. The only suggestions to the contrary were made by Mr Coates and Mr Allen. They were not disinterested, to say the least, and all other evidence allows me to reject their criticisms outright.

Mechanical failure

(Or, Catastrophic Engine failure)

Examination of the Rotax 912 ULS Engine

Important evidence was heard from Mr Richard Eacott, a mechanic and Specialist in Rotax engines. At the request of police, he travelled from Queensland to Goulburn airport in February 2007, to remove, inspect and dismantle the Rotax engine from the wreckage of JG's ultralight. This process was videotaped, and that tape most usefully shown to the court with Mr Eacott present and providing explanation where invited. He also provided 9 photographs of various engine parts, which became highly important exhibits in this inquest.

Primarily, he confirmed that it was the crank web that was the initial area of failure. His view was that when the piece of crank web, as a result of progressive stress, broke away, or was 'liberated', it was thrown through the engine crankcase adjacent to the gearbox mounting area, came into contact with the number 1 piston which then broke up, and the piston gudgeon pin then detached, in turn resulting in the reciprocating movement of the crankshaft continuing to hammer the various cylinder walls. The eventual result was that the connecting rods bent sufficiently as a result, to reach into the crankcase and seize the engine.

He estimated that the engine must have continued operating for no more than 2 minutes before its final seizing, and that this was the first time in his experience of 20 years that he had ever seen a failure of this magnitude in a Rotax 912 ULS engine particularly one which had done only 459 hours. There is no requirement to inspect the crankcase or web during regular services, and the twisting and cracks would not necessarily be noticeable to any person during a regular service. The significance of the continued operation of the engine after the piece of crank web broke away is whether there was time for JG and/or NS to implement appropriate emergency procedures.

Metallurgical investigations

Dr Roy Southin, a now retired academic metallurgist, and Mr Rob Smith, a metallurgist with the ATSB, each provided an expert statement to the court regarding the failure of

the crankshaft and in particular the crank web between number 1 and number 2 connecting rod journals. Those two statements contained considerable differences of opinion between the two experts although each was admirable in its professionalism and skill. However, once oral evidence was heard from both, the differences significantly dissipated. It was common ground that there was a failure of one of the crank webs where it was joined by press fit to the second journal; the alternative views related to whether the galling at fracture site B on the failed crank web occurred prior to or after liberation of the section of crank web, and whether the crack in the number 1 journal (which did not ultimately fail) was the result of torsional, or twisting, fatigue or reverse bending fatigue. After cross-examination, Dr Southin acknowledged that it was possible that the galling at Fracture B extended only to the fracture site, and that the 'beach marks' were consistent with Fracture B commencing at that same location. He also agreed that it was possible that Fracture B commenced as a result of that galling. Insofar as any significance remains, therefore, I prefer the view of Mr Smith, while acknowledging the expertise and wide experience of Dr Southin. I thank them both for their diligent examination and assistance. Overall, as the crack in the number 1 journal did not cause the failure of the crank web, the relevance of the examinations was to confirm that the crankshaft had been subject to torsional stresses.

Both Dr Southin and Mr Smith agreed that Fracture A was most likely initiated first, and that the discolouration on part of that fracture site was due to oxidisation. Neither however was able to say how long these fatigue cracks had been progressing or when they had initiated. Dr Southin roughly estimated a possible 7 hours of operation of the engine in excess of the fatigue stress limit plus a possible 3 and a half hours of operation in excess of fatigue limits prior to initiation of the crack. Dr Southin also acknowledged that as the crack progressed, the fatigue stress limit of the crank web would be progressively lowered such that it was possible that operation of the aircraft within ordinarily acceptable limits might nevertheless exceed the lowered fatigue limit. The relevance is to the life of the aircraft in that JG had the aircraft for over 100 hours of

operation, after purchasing it from Mr Coates, which brings us now to the question of maintenance, record keeping and operation of the aircraft prior to its sale to JG.

The importation, usage, maintenance and sale of the aircraft by Michael Coates

One could be forgiven for doubting whether any maintenance or servicing was ever performed on the aircraft while owned by Coates. His record keeping was so appalling and to the extent that it existed at all, inaccurate, that we will never know. Very little if any of his two days oral evidence could be accepted other than his own admission as to his deceptive, or fraudulent dealings with RA Aus in relation to the registration of aircraft and use of unregistered aircraft, his 're-registering' of an unregistered plane, his continued use of Czech registration in Australia in contravention of requirements, and his wrongful use of the serial number of an aircraft in Australia, on an aircraft in the USA. He compounded the litany of dishonesty by having prepared the Condition Report in August 2004 required for the sale to JG despite being prohibited from doing so by his pecuniary interest (i.e. ownership) of the aircraft on which the report was compiled, and further, without the qualification required to do so. There is a strong likelihood that records which he did produce to the court were prepared for court production, and also that 'Logs' were not contemporaneous but may have been fictionally backdated to ensure a sale. He admitted that much of what was written by him in his Sting newsletters stretched the truth or were 'sales puffery' for marketing purposes.

He claims that he set several speed or endurance records in the original Sting, which he then sold to JG. It is not clear whether JG knew of these claims; their significance, if true, is what effect that may have had on the engine, apart from whether he maintained regular if any servicing. It became necessary for Mr Coates to be granted a Certificate pursuant to s 33AA of the Coroners Act 1980 in so far as his evidence was concerned relating to the registration of the aircraft and his participation in the false affixation of the same registration details to another aircraft.

Despite all the above, no precise nexus can be made between the use and possible abuse of the aircraft by Mr Coates prior to its sale to JG.

There is little other history of possible engine/aircraft excessive use or abuse available. There is insufficient evidence to draw an evidentiary line on the balance of probabilities that the eventual catastrophic engine failure was directly attributable either to the use of the aircraft by Mr Coates or his representations as to its condition. Certainly, his practices, commercial dealings and authorizations beg to be thoroughly examined by RA Aus or CASA at least.But it is fact that JG had over 100 hours of further use of the aircraft and engine over more than two years after his purchase from Coates and even the objective expert evidence from Dr Southin and Mr Smith cannot directly attribute a time span or separate the use of the aircraft by Mr Coates from that of JG. I fully understand that the families of the deceased wish to attribute some blame to Mr Coates. In my view, he has brought that upon himself by the proof of his lack of credibility as a witness and otherwise. That is however as I have said, not sufficient in law for to warrant the making of any specific finding against him.

Related or ancillary issues

Altimeter

Mr Lamarra, a local aviator, gave evidence of his views concerning the aircraft's altimeter. The reading on the altimeter found at the crash site was 4,380 feet. Mr Lamarra's theory was that the catastrophic engine failure could have blocked the operation of the altimeter, and therefore suggests it shows the altitude at which the aircraft was flying when that failure occurred. This remains a feasible view.

The Garmin Global Positioning System (GPS)

The aircraft was fitted with a GPS to record flight path data and other information including pre-programmed waypoints and routes. It was removed from the aircraft wreckage and examined by officers from the NSW Police State Electronic Evidence Branch in an attempt to recover the last flight path data and gain further insight into the crash.

Unfortunately, although Mr McDonnell was able to extract the last longitude and latitude co ordinates and the probable flight direction (348 degrees from magnetic north), the unit was inadvertently allowed to power down, resulting in the loss of all data relating to the last flight path. Police supervisors considered the cost of further testing prohibitive given the limited prospect of success.

The Galaxy Rescue System, (GRS)

The aircraft was also fitted with a parachute deployable by means of a small rocket system located behind the aircraft occupants so that either could operate it, and known as the GRS. It was found at the crash site deployed, and some distance from the wreckage, whilst the drogue rocket was found very close to the point of impact. All experts agreed with the conclusion that neither JG nor NS could have deployed the GRS prior to impact, and that it activated itself as a result of the crash.

The crash

There thus seems no doubt that JG and NS were faced with a mid air catastrophic engine failure, which they could not have foreseen, and which, as previously described, emanated from torsional stress and ultimately seized the engine. Mr Nicholson, Detective Inspector Hurley and Mr Poole of RA Aus all gave helpful and credible opinions as to the last tragic moments. JG and NS clearly responded appropriately and skilfully to the crisis. They were able to manoeuvre, by gliding, the silent, powerless aircraft to a position on which it was appropriate (as all, including Ms Miller agreed) to attempt an emergency landing. The terrain was upward sloping, and relatively clear, there was sufficient length for a landing, and the prevailing wind was favourable. However, either because of unwanted speed, flare out, the rocky outcrop at the end of the site, down draughts or ground effect or a combination of all, the aircraft hit the ground nose first and immediately broke up, with such impact that the medical evidence suggests both men died instantly. Their flight had lasted almost exactly one hour, from the time of take off from Goulburn.

Recommendations under s 22A of the Coroners Act 1980

This inquest effectively has been concerned with the Manner of death, that is, how the deaths happened, as the other elements were clear and known from the outset. I am not inclined to place a level of culpability upon any particular individual. The test under s 19 of the Act sets a high threshold, which, as I have said, has not in my view been met. Furthermore these proceedings are not a forum for the investigation or promotion of prospective civil negligence proceedings.

The inquest has however revealed a number of deficiencies as to the importation, use, registration, regulations, maintenance and repair of Ulralights in general, and this Sting in particular. The result of these deficiencies was an aircraft with continuing mechanical problems not properly identified, terminating in the catastrophic mechanical failure described, placing these two good men in a dire emergency, which despite their efforts, they were unable to resolve. I intend to make strong recommendations as to the regulations and requirements for such recreational aircraft.

An integral purpose of the coronial process is to seek to prevent further deaths, as well as to seek the truth of cause and manner of death. All participants need to be reminded of the inherent dangers in flying recreational aircraft and the importance of reassessing and re-evaluating stringent compliance with safety and maintenance requirements so as to endeavour to prevent future tragedies.

The checking and maintenance of records, servicing repairs and of course the Condition Report were all the subject of close scrutiny in these proceedings, and fell very short of adequate. Similarly there were clear deficiencies in the Pilot Log Book and Aircraft Log Book completed by Mr Coates with respect to this aircraft. They failed to comply with the requirements for such records provided by the RA Aus Operations and Technical Manuals and were inconsistent in their detail. That these deficiencies and inconsistencies were able to go unchecked is unfortunate and unsatisfactory. There

clearly needs to be a system of independent and 'third party' checking of these records so as to provide both incentive and discipline with respect to their accuracy.

The court heard evidence from Mr Poole of RA Aus concerning changes that have recently been made to the registration and certification processes for these aircraft. For example, it is now mandatory to fit a manifold pressure gauge to any aircraft with a variable pitch propeller. However, the role of RA Aus has been minimal if compared to that of CASA in general aviation. This has been due to the voluntary nature of the organisation, its paucity of funding and, partly, the desire of owner/pilots to keep the costs of this recreational activity as low as possible. The supervisory powers of the Association will therefore remain ad hoc and post event, unless remedied. Mr Poole told us that RA Aus does not currently have the resources to supervise or sanction safety regulations even to a minimum standard, but that the role of RA Aus is expanding, and the types of aircraft involved becoming more sophisticated. An aircraft such as the Sting, which is high performance, has many of the characteristics of general aviation light aircraft, but is flown with an engine which the manufacturer declines to certify as airworthy due to its propensity to stop suddenly, and that its components would not be acceptable on a general aviation aircraft. Further, Rotax engines are not tested to the level of general aviation engines, and the flimsy nature of the ultralight construction compromises occupants in a crash situation. Given the unacceptable level of fatalities among ultralight users, and the obvious inherent dangers in the sport, I fail to see why registration, sales, record-keeping and other requirements should not be as forceful as those applied by CASA to general aviation, Indeed, the family of Neville Smith, through their senior counsel, Mr Blackett have indicated strongly their view that if anything, such requirements are even more important than that for motor vehicles, which are now accepted by the public as fundamental.

I make the following recommendations, the Minister for Transport, with copies to RA AUS and to CASA, and ask for advice from each within six months as to their implementation.

1. That RA Aus be funded through CASA sufficiently to ensure annual inspection of Pilot and Aircraft Log Book Records, and to supervise regular servicing and maintenance of all recreational aircraft with two Levels required for maintenance, Level 1 being confined to low level maintenance by owners, and an annual, or 100 hours, whichever is the earlier, Level 2 service and inspection by suitably qualified independent mechanics. Further, that the current 'Policy and Accreditation of Persons Suitable to Conduct Maintenance on Recreational Aircraft' be reviewed by RA Aus with a view to restricting the type of work that may be carried out at Level 1.

2. That RA Aus have power to ensure that Condition Reports are correctly prepared and presented by an independent LAME prior to any sale of any aircraft.

3. That RA Aus establish a public register (including the records) of all recreational aviation aircraft (ultralight) importations and sales in Australia, and accept the obligation to ensure appropriate registration based on a certificate of airworthiness.

4. That RA Aus have the power to impose sanctions including fines and loss of licence for non-adherence to its requirements.

Findings under s 22 of the Coroners Act 1980

John Benjamin Guthrie died at 3.15 pm on 6 January 2007 upon a property known as 'Collingwood' situated at 2312-2314 Old Hume Highway, Gunning in the State of NSW as a result of multiple blunt force injuries sustained when the recreational aviation aircraft (ultralight) in which he was flying sustained a catastrophic engine failure and as a result, then impacted with the ground.

Neville Garry Smith died at 3.15 pm on 6 January 2007 upon a property known as 'Collingwood' situated at 2312-2314 Old Hume Highway, Gunning in the State of NSW as a result of multiple blunt force injuries sustained when the recreational aviation aircraft (ultralight) in which he was flying sustained a catastrophic engine failure and as a result, then impacted with the ground.

Magistrate Mary Jerram

NSW State Coroner

4 February 2009