



FINDING OF INQUEST

An Inquest taken on behalf of our Sovereign Lady the Queen at Adelaide in the State of South Australia, on the 10th of April, 2000, 27th of August, 2001 and the 10th of September, 2001, before Wayne Cromwell Chivell, a Coroner for the said State, concerning the death of Olive Edna Cornish.

I, the said Coroner, find that, Olive Edna Cornish aged 75 years, late of 8 Addison Road, Pennington, South Australia, died at Pennington on the 14th of October, 1998 as a result of avulsion of the inferior vena cava from the heart due to severe crush injury of the chest, together with crush asphyxia and flail chest due to multiple rib fractures. I find that the circumstances of the death were as follows:

1. Introduction

- 1.1. Mrs Olive Cornish, aged 75 years, died on 14 October 1998 as a result of being crushed between her car, a 1982 Mitsubishi Sigma sedan, and the gates of her property at 8 Addison Road, Pennington.
- 1.2. Mrs Cornish's son Christopher said he last saw his mother on 12 October 1998, when she was in good health (exhibit C1a, p1).
- 1.3. About 11:35am on 14 October 1998, Dr Steven Koh was working in his surgery at 7 Addison Road, near Mrs Cornish's house, when people alerted him to an accident across the road. Dr Koh said:

‘As I got near the driveway, I could see the fence and a gate bowing out towards the street. The gate was constructed of metal railing and was bowing approximately half a metre out towards the street across the footpath. I noticed that there was no metal panelling on this section of the gate.

I saw an elderly Caucasian female possibly aged in her late sixties to early seventies dressed in a purple floral dress, standing upright facing south towards the street.

I could hear the sound of a vehicle's engine revving loudly, and as I approached the woman, I saw a grey mitsubishi sigma sedan parked in the driveway facing north, the motor was running and revving very high. I could see that this female was pinned against the gate by the vehicle and she was motionless and unresponsive. One of the metal rails was bent across her chest and appeared to be crushing her in this area. The female was pinned against the gate by the rear passenger side of the sigma sedan, near the left hand tail light. There was a dent on the left hand side of the lip of the boot. It was this section of the car that was pushing up against her upper buttocks and lower back, and pushing her against the gate. I looked at the female, she was motionless and appeared very pale to grey in the face.

I went to the drivers side door of the vehicle, I think I opened it, I noticed that the vehicle had an automatic gear box with a 'T' bar shifter. I can't remember what gear the car was in, I got in, put the car in drive, and the car gave a huge shunt forward, and took off straight away, I didn't have my foot on the accelerator, I let the vehicle move forward about five metres, to free the female who was trapped behind it. I am unable to say whether the female fell to the ground or was lowered to the ground after I moved the car. I used one foot on the brake pedal, and pulled on the handbrake to stop the vehicle. I was trying to put the vehicle into 'Park', however it was still trying to reverse and go backwards. I put my foot on the brake pedal and turned the ignition off.'

(Exhibit C5a, p1-2)

- 1.4. Dr Koh said that when he returned to Mrs Cornish, he noted that there was no pulse or respiration. He and another doctor commenced cardio-pulmonary resuscitation until the ambulance arrived. They were unable to restore cardiac output, however.
- 1.5. Mrs Cornish arrived by ambulance at The Queen Elizabeth Hospital at about 12:10pm where she was examined by Dr Julian Toh, but it was clear that she had died, and he certified life extinct at that time (exhibit C2a).

2. Cause of death

- 2.1. A post-mortem examination of the body of the deceased was performed by Dr John D Gilbert, Forensic Pathologist, on 15 October 1998. Dr Gilbert's diagnosis of the cause of death was:

'Avulsion of the inferior vena cava from heart due to severe crush injury of the chest.
Additional contributing factors: Crush asphyxia.

Flail chest due to multiple rib fractures.'

(Exhibit C3a, p1)

2.2. Dr Gilbert commented:

- ‘1. Death was due to internal haemorrhage due to avulsion of the inferior vena cava from the heart due to a crush injury of the chest. Death was also likely to have been contributed to by crush asphyxia and respiratory failure due to a flail chest with extensive bilateral rib fractures. The avulsion of the inferior vena cava would have proved rapidly lethal due to unrestrained loss of blood into the abdominal cavity. Significant coronary artery disease with evidence of previous myocardial infarction was noted as an incidental finding.
2. Analysis of a specimen of blood obtained at autopsy, reportedly showed a blood alcohol concentration of nil. EMIT screening of a specimen of urine for amphetamines, benzodiazepines, methadone, opiates and tricyclic antidepressants was negative.

(Exhibit C3a, p4)

3. Circumstances of death

- 3.1. When Senior Constable Michael Wynne of Major Crash Investigation Section (‘MCIS’) of South Australia Police (‘SAPOL’) attended the scene, he noted an electrical cable from a small portable air compressor outside the vehicle on the driveway attached to the cigarette lighter in the car.
- 3.2. Senior Constable Wynne noted that the automatic gear selector was in the ‘Park’ position, and the handbrake was engaged. He noted that the rear left tyre on the car was flatter than the others, and the valve cap was missing. He found a valve cap and tyre gauge in the garage.
- 3.3. The vehicle was inspected by Mr Eliot McDonald, a Vehicle Examiner with SAPOL. He noted that:

‘There was wear in the gear selector linkage and it was possible that although the gear stick inside the vehicle indicated the vehicle was in park, it was still in the reverse position at the transmission.

...

With the vehicle at idle speed, the vehicle would have moved backwards straight away if all the tyres were inflated. Once the left hand tyre was pumped up enough the resistance the wheel had to stop the vehicle had diminished. The vehicle would then start to move backwards.’

(Exhibit C8a, p1-2)

- 3.4. Advice was sought from the Royal Automobile Association of South Australia Incorporated ('RAA'), and their Manager Technical Services, Mr Mark Borlace, confirmed that this problem was known to the industry. He wrote:

'The automatic transmission selector mechanism of a Mitsubishi Sigma can allow the selector indicator to show the vehicle as being in park but with severe wear in the linkage bushes the vehicle's transmission can actually be in reverse gear. We are not aware of any published service bulletins by the manufacturer of this being a regular problem however our survey of some Adelaide Automatic Transmission Specialist repairers, who are known to us, concluded that they were aware of selector linkage bushes wearing and/or splitting and falling out which could induce this problem in Mitsubishi Sigmas. The vehicle has an inhibitor switch which will normally only allow the starter motor and ignition systems be activated when the vehicle is either in park or neutral. However, because the inhibitor switch is mounted at the selector and not at the gearbox, the engine could be started when the transmission selector indicator, should it be in park or neutral, and it is really in reverse.

Although we are aware of similar wear in transmission selector operating bushes in Mitsubishi Magna, which has a completely different transmission configuration, the wear in these bushes does not present the same danger. The Mitsubishi Magna has its inhibitor switch located at the transmission manual control lever therefore the car is only able to start when the transmission is actually engaged in park or neutral at the gearbox assembly.

Although most vehicles manufacturers servicing schedules include the regular inspection of these mechanisms, a public awareness of this type of issue is still important as the type of wear described in the Mitsubishi Sigma is similar to that of many other types of vehicles. The need for people to understand that excessive free play that develops in transmission systems can have a detrimental effect on performance of the safe operation of the transmission inhibition of the starter system.'

(Exhibit C9a, p1-2)

- 3.5. A report provided by Mitsubishi Motors Australia Limited ('MMAL'), dated 19 September 2000, was prepared by Mr I P Robilliard, Manager, Technical Affairs. Unfortunately Mr Robilliard was unable to inspect Mrs Cornish's actual vehicle at that stage. He obtained a vehicle of similar vintage, which had been driven a similar distance.
- 3.6. Unfortunately, Mr McDonald does not seem to have dismantled the linkage system of Mrs Cornish's car. His reference to worn linkages led Mr Robilliard to test the linkages rather than the bushes (a small plastic component which acts as a cushion between two metal parts, and is designed to wear away and be replaced, thereby preventing damage to the metal linkages).

- 3.7. As a result of this misunderstanding, Mr Robilliard's first report concluded that it was impossible for the lever to be in 'Park' when the transmission was in 'Reverse'. In fact Mr Robilliard removed two bushes as part of his test to provide a 'worse case scenario', but the conclusion was the same (exhibit C10, p7).
- 3.8. This obviously did not sit well with the clear evidence of Dr Koh, and Mr McDonald. Mrs Cornish's vehicle was then located, and with the kind assistance of the RAA, was transported to their workshop and examined. The vehicle had been driven a further 12,000 kilometres since Mrs Cornish's accident.
- 3.9. It was confirmed that when the lever was in the 'Park' position, the transmission was in 'Reverse'. Further inspection revealed that the two bushes Mr Robilliard had removed in his earlier testing were indeed missing, and a third bush was worn to the point of being useless. He said this was not apparent until the linkage was dismantled (exhibit C10a, p3). It was the absence of all three bushes which produced the result that when the lever in the cabin was moved to the 'Park' position, the transmission selector lever did not move the required distance, and remained in the 'Reverse' position. When the bushes were replaced, and the system adjusted correctly, this defect disappeared.
- 3.10. Mr Robilliard also tested the automatic choke on Mrs Cornish's vehicle, and found that the engine speed when started cold was 1480rpm, and rose steadily to 1930rpm after 1.5 minutes, then fell back to 1600rpm after 4.0 minutes.
- 3.11. The photographs of the vehicle taken by Senior Constable Wynne indicate that it was in good condition and well cared for. Mr Gregory Turnbull, an experienced and qualified motor mechanic, stated that he fitted a new engine to the vehicle in July 1997, and serviced it in September 1997. He serviced in again in April 1998. He said:

'There (were) no gear shift problems at that stage.'

(Exhibit C6a, p1)

Mr Turnbull said that he had been aware of the problem, and that he checked Mrs Cornish's gear shift linkage bushes 'for movement and gear shift operation from inside the car'. He said it would be 'feasible' for the bushes to have broken down in the 6 months since he serviced the car (exhibit C6a, p2).

3.12. Conclusion

Although there is a certain amount of conjecture involved, the evidence available suggests that:

- Mrs Cornish noticed that the left hand rear tyre on the car was flat, so she took off the valve cap;
- if the car was still in the garage, Mrs Cornish then reversed the car into the driveway to get more room to work;
- she obtained the air compressor, and plugged it into the cigarette lighter in the car;
- she then started the car, in order to provide sufficient voltage for the compressor, or to avoid running down the battery;
- she then got out of the car, and moved around to the rear, in order to go to the left hand rear tyre to attach the hose and begin inflating the tyre;
- as she moved around the back of the car, the engine speed was high enough, because of the cold start, to overcome the resistance offered by the deflated tyre and/or the parking brake, and crush Mrs Cornish against the gate.

3.13. There may be other scenarios which can be fitted to the known facts – Mrs Cornish may have already fitted the hose to the valve, and moved behind the car for another reason – it matters little. The point is that she was behind the car when it moved backwards quickly, pinning her to the gate. Dr Koh said the engine was ‘revving very high’, and it gave a ‘huge shunt’ forward when he put it in ‘Drive’.

3.14. Mr Evans, counsel for MMAL, submitted that it was open to find that Mrs Cornish inadvertently left the car in ‘Reverse’, and because the tyre was flat, the vehicle did not roll back until it was reinflated. I accept that this is possible, but less likely in the circumstances. The defect in the transmission linkage provides a much more cogent explanation for this tragedy and I find that, on the balance of probabilities, it caused Mrs Cornish’s death.

4. Recommendations

4.1. I agree with Mr Borlace that there is a need for public awareness that, unless automatic transmissions and linkages are serviced regularly by an appropriately qualified mechanic, an unsafe situation can develop whereby a car’s transmission can still be in ‘Drive’ or ‘Reverse’ modes when it appears to be in ‘Park’.

- 4.2. In addition, it may not be well understood that the automatic choke on an older car can cause the engine to operate at a speed which can propel the car forward at a relatively rapid rate.
- 4.3. This problem is particularly significant in older cars, such as the 1982 Sigma, in which the inhibitor switch, which should prevent the engine being turned on when the vehicle is in 'Drive' or 'Reverse', operates from the selector column inside the car, rather than from the transmission itself.
- 4.4. I therefore recommend that a public awareness campaign be conducted to bring these potential dangers to public attention, namely that:
- automatic transmission linkages should be serviced, and the bushes checked, regularly;
 - unless this occurs, the driver may be misled into thinking that the transmission has been disengaged when it has not;
 - this is particularly important in older vehicles, such as the 1982 Sigma, where the inhibitor switch operates from the selector in the cabin rather than at the transmission itself.

Key Words: Motor Vehicle Accident; Servicing; Automatic Transmissions.

In witness whereof the said Coroner has hereunto set and subscribed his hand and

Seal the 10th day of September, 2001.

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Coroner