
The Skyfall: The Ana Maria Transit Bus Accident

In the rainy dawn of December 16, 2014, an Ana Maria Transit Bus fell off the Metro Manila Skyway, killing 25, including two passengers of a sedan that was crushed by the falling bus. Another 15 people were seriously injured. The Highway Patrol Group of the National Capital Region South Luzon Expressway reported that it was one of the Philippines' worst accidents in 2014.

Darius Garcia, an accident investigator, was asked to be the head of the accident investigation team. It had been seven days and the case still was not solved. The families of the accident victims were clamoring for results, and Garcia's boss gave him just two more days to solve the case.

Garcia immediately proceeded to the room where all the pieces of evidence were laid out on a table. He scrupulously reviewed the photos, video footage, and transcripts of interviews with survivors, witnesses, and police that responded to the scene. One by one, he looked at the factors that may have contributed to the accident. As he analyzed these data, questions filled his mind.

Did the driver exceed the speed limit? Was the highway poorly constructed? Was weather a factor to consider? What about the condition of the driver and the bus?

These questions guided Garcia as he went about searching for the truth behind this accident. Equipped with basic principles in physics, Garcia started reviewing the information gathered and was certain a solution was at hand.

Speeding?

A witness at the scene of the accident said that she was driving on the skyway when she saw the Ana Maria Transit bus overtaking her car. She indicated that she heard a screeching sound, and about two seconds later, a loud crashing sound as the bus hit the skyway railway. When asked what her speed was during this time, the woman said she was not sure.

There was video showing the bus travelling along the wet road of the skyway several minutes before the incident. The footage showed that the bus was going fast, but Garcia remained uncertain as to whether the bus was traveling at a velocity above the 60-kph speed limit before it went off the road.

Garcia knew he had to dig deeper.

The Location of the Accident

Garcia took a look at the photos and video footage of the bus after the accident and noticed something important. He noted that the bus flew up about 30 feet and landed 72 feet from the base of the skyway. He wondered how fast the bus travelled down the road.

The portion of the skyway where the bus went off the road was curved. Garcia inquired about the radius of that curve with the Department of Public Works and Highways (DPWH), and found it was 46 meters long. Did the driver go above the maximum speed at which he could turn successfully? Or, did the DPWH not consider the worst-case scenario (i.e., least possible friction) in setting the 60-kph speed limit?

The Bus

Based on the results of the inspection done by the Land Transportation and Franchise Regulatory Board (LTFRB), six tires (two in front and four at the rear) of the bus were already worn out. Garcia researched the coefficient of static friction of a worn-out tire and found that it was about 0.70; the rain reduced it further by 10%.

Skid marks about 6 meters long were also seen on the road. Garcia knew that the skid marks indicated that the brakes of the bus worked when the driver attempted to stop the bus. Garcia next thought about what the speed of the bus had been before the driver stepped on the brakes.

The Bus Driver

Garcia looked at the possibility that the physical condition of the driver might have led to the accident. Was he tired? Did he fall asleep? Was he texting? Was he just speeding to reach his target earnings for the day?

Unfortunately, the driver died before he could explain how the accident happened. He succumbed to his injuries three days after the accident, however, tested negative for drug and alcohol use.

The Bus Company

A records check on the company conducted by the LTFRB in December showed Ana Maria Transit was operating without the proper compliance certificate from the Labor Department. The labor compliance certificate was given to bus companies that implemented a two-tier payment system for their drivers and conductors. Under this system, bus drivers and conductors were paid a minimum wage at the first tier, and a performance-based commission at the second tier. This system was meant to discourage bus drivers from racing or jockeying for position to accommodate as many commuters as possible.

Earlier reports quoted a driver from the company as saying drivers allegedly had to work in shifts of up to 21 hours and were still paid on a commission basis only. Could this be the reason why the driver was going too fast on a slick road?

The skyway accident was not the first time an Ana Maria bus was involved in an accident. In October 2011, an Ana Maria bus almost fell off the Epifanio Delos Santos Avenue flyover in Ortigas, resulting in a 90-day suspension of the company's fleet.

Conclusion

With this evidence at hand, Garcia pondered: "With the Ana Maria Transit bus not making contact with any other vehicle on the skyway, what could have caused one of the nation's worst road tragedies in 2014?"