

# NTSB reveals spaceship crash timeline, fingers lever

November 4 2014, by Michael Thurston

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Investigators gave a precise timeline late Monday of the devastating Virgin Galactic spaceship crash, detailing exactly when a slowing mechanism was wrongly deployed, but said they could not determine who activated it.

The co-pilot of the SpaceShipTwo died in the crash Friday over California's Mojave desert while the pilot survived the disaster, which has called into question Virgin chief Richard Branson's dream of tourist flights to the edge of space.

Investigators said Sunday that a lock-unlock lever, used to activate a process in SpaceShipTwo's tail section—typically to slow it for re-entry into the Earth's atmosphere—had been moved by co-pilot Michael Alsbury.

But at a final on-scene press briefing late Monday, National Transportation Safety Board (NTSB) acting chairman Christopher Hart said he had been mistaken in identifying the co-pilot.

Video showed the person in the right seat move the lock-unlock lever, but Hart said [investigators](#) do not yet know which of the two crew—Alsbury, or pilot Pete Siebold, who survived—moved it.

Setting out the exact timeline, he said that the SpaceShipTwo was released from its mothership WhiteKnightTwo—which flew it up to some 45,000 feet—at 10:07 and 19 seconds.

Two seconds later the engines started. Eight seconds after that, at 10:07 and 29 seconds, the rocket reached .94 Mach, accelerating to 1.02 Mach by 10:07 and 31 seconds.

In that two-second period the lock-unlock lever was switched and the "feathering" mechanism started to deploy. At 10:07 and 34 seconds the data and video feeds from the rocket stopped, as it disintegrated over the desert.

## **'Feathering' deployed prematurely**

It was unclear if the "feathering"—which acts like a badminton shuttlecock's feathers, slowing the aircraft down during re-entry and pointing it in the right direction—started on its own or as a result of the lever being moved.

The lever, Hart said, was not supposed to be moved until reaching a speed of Mach 1.4. He reiterated that investigators would likely not announce a probable cause of the crash for up to 12 months.

Branson said earlier Monday that the deployment of the slowing mechanism may "well be" the cause of the catastrophe, while hitting out at what he called hurtful critics and "self-proclaimed experts."

Speaking on NBC's Today show Monday, Branson said he hadn't seen the cockpit video showing the co-pilot triggering the lock-unlock switch.

"The NTSB, you know, are leading the investigation. And we go by exactly what they tell us," he said.

"But, you know, if the deployment did take place early, obviously, they're indicating that may well be the cause. But we need them to examine that further and let us know," he added.

But Branson also hit out against "hurtful" critics and "self-proclaimed experts" after a rocket scientist said the company had ignored safety warnings ahead of the deadly crash of one of its spacecraft.

"I've never seen such irresponsible innuendo and damaging innuendo," the British business tycoon told Britain's Sky News television, referring to critical press reports in Britain.

Branson wants to ferry wealthy customers to the edge of space, charging \$250,000 (200,000 euros) per ticket, and the crash is expected to delay the program.

In an interview with CNN, Branson vowed to press ahead, once the cause of the crash was identified.

"If test pilots hadn't taken risks, we wouldn't have had the 747. Two blew up in early days of airline travel. Now airline travel is as safe as anything," he said.

"We've got to go through the difficult testing stage of creating a space line in order to make it safe for travelers who want to travel on that space line in the years ahead. We will persevere and will succeed."

He also reiterated that he and his son will be on the first commercial flight.

"There is no way I would ask others to travel on Virgin Galactic unless I'd been the first to go myself. Therefore I will certainly be the first to travel," he said.

The [crash](#) was the second disaster to rock the private sector space industry in less than a week, after an Antares rocket carrying supplies to the International Space Station exploded after takeoff in Virginia on

Tuesday.

Experts say the accident will delay the advent of commercial space tourism by several years.

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