Boeing design flaw a factor in Lion Air crash: Indonesian probe

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The October 29 Boeing crash was followed just months later by a second—involving the same model—in Ethiopia

A design flaw, inadequate pilot training and poor flight crew performance contributed to a Boeing jet crashing in Indonesia last year,

killing all 189 people on board, investigators said Friday, in what one aviation analyst called a "damning" report.

The Lion Air disaster was followed months later by a second crash—involving the same model of aircraft—when an Ethiopian Airlines plane went down with 157 people aboard, leading to the global grounding of Boeing's entire 737 MAX fleet.

The crashes threw a spotlight on the MAX model's Manoeuvring Characteristics Augmentation System (MCAS), an anti-stall mechanism, that pilots in both planes had struggled to control as the jets careered downwards.

On Friday, Indonesia's National Transportation Safety Committee said Boeing's design of the anti-stall system and its certification by US regulators was "inadequate".

The MCAS was vulnerable to a single sensor that it relied on for inputs, and 737 MAX pilots were not properly briefed on how to handle a malfunction, it said in its final report on the crash.

"The aircraft flight manual and flight crew training did not include information about MCAS," it said.

A sensor on the doomed jet's system was "miscalibrated" and the problem wasn't caught by Lion Air maintenance crews, it said, after the plane's previous flight also experienced loss-of-control problems.

The emergency was not "effectively managed" by the crew, who had previous performance issues, it added.

Indonesia's National Transportation Safety Committee said there were flaws in Boeing's design of the anti-stall system and of its certification by US regulators

'Heartfelt condolences'

An earlier report released by international regulators said the US Federal Aviation Administration (FAA) lacked the manpower and expertise to fully evaluate the jet's MCAS when it certified the plane.

Friday's report comes after Boeing—facing scores of lawsuits—replaced the chief of its commercial plane division this week, the most significant executive departure since the 737 MAX grounding plunged it into crisis seven months ago.

Boeing has faced fresh scrutiny following the revelation of text messages from 2016 in which a test pilot described the MCAS during a simulation as "running rampant" and behaving in an "egregious" manner.

On Friday, Boeing expressed "heartfelt condolences" to victims' families, and said it had since fixed the flight-control system's software.

"These software changes will prevent the flight control conditions that occurred in this accident from ever happening again," Boeing CEO Dennis Muilenburg said in a statement.

NTSC chairman Soerjanto Tjahjono told reporters Friday that all the factors it highlighted were "interrelated" in explaining why the crash happened.

But aviation analysts said much of the blame traces back to Boeing.

"What the Indonesians have written here is damning," said Stephen Wright, professor of aircraft systems at Finland's Tampere University.

Indonesian carrier Lion Air is Southeast Asia's biggest carrier by fleet size

"(Lion staff) were doing their job based on the information that they've been given ... Everything points back to the manufacturer and how it (MCAS) was approved," he added.

Another expert said the aircraft's design problems trumped all else.

"Pilots can make mistakes—they're human, but the root of the problem is the design," said Jakarta-based aviation analyst Gerry Soejatman.

"The MCAS was created to be able to react based on a single input only, via one computer, (and) there was no cross-checking system to confirm

whether or not the input was accurate. That's the issue."

'My only son'

Lion Air, Southeast Asia's biggest carrier by fleet size, said Friday's report was "essential to determine the root cause and contributing factors to the accident and take immediate corrective actions".

The FAA said it the grounded single-aisle jet would only return to service only after it determined the model is safe.

After receiving a briefing on the report this week ahead of its public release, some of the victims' relatives expressed disappointment.

"However, we've got no choice but to accept the report," said Epi Syamsul Qomar, who lost his son, after families met with investigators in Jakarta.

"People keep telling me to let go, to stay strong, but how do I do that? It's not that easy. He was my only son and I miss him every day."