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TRANSCRIPT

The Origins of Boeing's 737 Max Crisis

Hosted by Michael Barbaro, produced by Michael Simon Johnson, Jessica Cheung and Clare Toeniskoetter, and edited by Lisa Tobin and Larissa Anderson

A dangerous software system was implicated in two fatal crashes in less than five months. Why was the plane deemed safe to fly?

Tuesday, July 30th, 2019

Michael Barbaro

From The New York Times, I'm Michael Barbaro. This is "The Daily."

Today: The crash of two Boeing 737 Max jets has been linked to a new software system that helped send the planes into a deadly nose-dive. Natalie Kitroeff investigates what federal regulators did and didn't know about that system.

It's Tuesday, July 30.

Archived Recording 1

Breaking news overnight — we begin with the latest on the brand new Lion Air Boeing 737 Max 8 passenger jet that crashed into the sea this morning with 189 people onboard.

The mangled wreckage has been found. The Boeing 737 Max 8 aircraft went missing just 13 minutes after takeoff from the Indonesian capital of Jakarta.

Archived Recording 2

Boeing facing intense scrutiny after all 157 people onboard, including eight Americans, died yesterday when a plane crashed in Africa.

Archived Recording 3

This is the second catastrophic crash involving Boeing's popular 737 Max 8 aircraft.

Archived Recording 4

Concerns, of course, are being raised about the safety systems.

Archived Recording 5

This anti-stall system — the MCAS — is being investigated as a possible cause.

Archived Recording 6 of Kreindler Partner and Aviation Analyst Justin Green

Why didn't they — the F.A.A. — stop the airplanes from flying after they knew Lion Air had been caused by the MCAS system?

Archived Recording 7

Was the giving too much authority to Boeing to certify its own planes?

Archived Recording 8 of Kreindler Partner and Aviation Analyst Justin Green

They're saying that Boeing and the F.A.A. were in a conspiracy to get this airplane out. Whether that claim can be proven, it remains to be seen.

Michael Barbaro

Natalie, it's been weeks now since we've heard any updates on the Boeing story. What have you been up to?

Natalie Kitroeff

We've been trying to report out exactly how Boeing 737 Max was developed, how it was certified, and how it ended up with this dangerous new system called MCAS. This is the software that was implicated in both crashes — both crashes, which killed 346 people. And at the heart of this story is the relationship between Boeing and the F.A.A. We were coming to this with an understanding that for years, the F.A.A. has been pushed by Congress to give

Boeing more control over the process of approving its own planes. And what we were interested in is understanding exactly how that shift, how that handoff, affected the F.A.A.'s understanding of this plane and its decision to certify it as safe to fly.

Michael Barbaro

And, Natalie, why was Congress pushing for that delegation of authority from the F.A.A., which we think of as the kind of guardian of our air safety, to Boeing?

Natalie Kitroeff

Well, industry groups had been lobbying for it. You know, aircraft manufacturers like Boeing would like to have more control over this process. And many of the top officials at the F.A.A. actually support this approach. Many of them are saying that they don't feel as though they have the resources necessary to be as involved in the certification process. They're also having a tough time recruiting talent. You know, this is a government agency with government salaries, and they're competing for engineers with companies like Boeing. And so they are trying to do more with less. And the way of doing more with less is to offload as much of the routine certification tasks as possible onto the manufacturer — onto Boeing — and to keep the critical safety items. So you free up the F.A.A. officials that remain to focus on the most important stuff in the certification of an airplane.

Michael Barbaro

But I guess, Natalie, why would you be focused on this shift in relation to the MCAS system, given that it would still fall, I have to imagine, into the category of vital safety checks that are going to be done by the F.A.A., not delegated to Boeing?

Natalie Kitroeff

Right. That was the central mystery. This seemed like the kind of critical safety issue that would have remained firmly within the control of the F.A.A.

And yet, there was clearly some kind of disconnect here. And so my question was, did this shift toward more reliance on industry have something to do with it?

Michael Barbaro

So how do you answer that question?

Natalie Kitroeff

We are trying our very best to talk to as many people that were involved in the certification of the Max as possible. But they're not picking up a lot of the time. I mean, we get some people on the phone, but others are telling us to please go away. And eventually, we hit a wall. And so I decided to fly to Seattle and basically show up at people's doors and see if they would give me the time of day.

I must have driven five hours every day, on average — sometimes more.

Michael Barbaro

And whose doors are you knocking on — Boeing people, F.A.A. people?

Natalie Kitroeff

I'm at a former Boeing employee's house.

Natalie Kitroeff

Both.

Michael Barbaro

Both.

Natalie Kitroeff

Both. Seattle is vast. These folks live in various different parts of the state. And so, you know, it was the kind of thing where I just was really trying to maximize the amount of time that I had there.

Natalie Kitroeff

Hi. I want to get in there too.

A Cat

[MEOWS]

Natalie Kitroeff

To just try to catch as many people as possible.

Michael Barbaro

And for the most part, what was the response when you knocked on people's doors?

Natalie Kitroeff

All right, no one's here.

Natalie Kitroeff

For the most part, the response was no response.

Natalie Kitroeff

Going to try to leave this letter in the door.

Natalie Kitroeff

Some people told me to go away.

Natalie Kitroeff

Fruitless morning so far.

Natalie Kitroeff

But there were some people that did want to talk.

Archived Recording

Your destination is on the left.

Natalie Kitroeff

I am here at Mike McRae's house. He's a former Boeing employee, but he knows I'm coming.

Natalie Kitroeff

Mike McRae is one of them.

Natalie Kitroeff

Did you build this house?

Mike Mcrae

No. It was built — actually —

Michael Barbaro

Tell me about that.

Natalie Kitroeff

So — and you were at Boeing, remind me the years, just so I can situate myself?

Mike Mcrae

I can't, I mean, I think I went to work there in late '77? Hasn't been important for a while, so it's not in my head.

Natalie Kitroeff

Mike is a former Boeing employee and a former F.A.A. employee.

Mike Mcrae

I did the 5-7 job, and then I inherited all of the Renton division. So I had inherited —

Natalie Kitroeff

He's an engineer. He knows a lot about this world. He left the F.A.A. in 2013, and he wasn't directly involved in the Max's certification. But he knows a lot of the players involved with creating the group that certified the Max, and he is an expert on Boeing culture and F.A.A. culture. He's kind of the perfect person, in many ways, to explain the shift.

Michael Barbaro

And what does Mike tell you about how this shift in certification played out?

Mike Mcrae

I mean, everybody has been having to accept more and more delegation. Each manager that came along had to accept more, because they just flat didn't have the ability to — they didn't have the money per salary to go out and get senior people, and they didn't have the authorization to get body count.

Natalie Kitroeff

Mike says, basically, that the goal was, in many ways, totally understandable.

Mike Mcrae

It's a resource management thing.

Natalie Kitroeff

He agrees that the expertise had kind of thinned out in the F.A.A.

Mike Mcrae

Back in the day, the average guy had at least four or five years of industry experience before he came to the agency. But what we started to get was just kids fresh out of school or even coming out of companies that were pipe fitters or whatever.

Natalie Kitroeff

He agrees that there was a need to rely more on Boeing. And he thought that the idea of offloading mundane tasks to the company was totally worthy. That sounded good to him.

Mike Mcrae

They had to do better with what they had. They had to work smarter. And they thought that this processing and delegation was a way to do it smarter. And if the company stepped up to do what the agency used to do, sounds fine.

Natalie Kitroeff

But what he says is that it goes beyond its initial intention —

Mike Mcrae

The more they trust the company, the less critical a system is, the more they'll delegate. And that's kind of gotten to be a runaway freight train, according to people I talked to.

Natalie Kitroeff

— and veers into something that comes much closer to a situation in which the agency is ceding control over the certification process.

Mike Mcrae

Well, yeah, Ali was definitely one who would trust the industry first.

Natalie Kitroeff

And Mike identifies one person who is really at the heart of all of this.

Natalie Kitroeff

That's Ali Bahrami?

Natalie Kitroeff

It's a guy named Ali Bahrami. Bahrami was the head of the F.A.A.'s Seattle operation for many years. He then left for a period of time to become a lobbyist for an industry group that represented manufacturers, including Boeing. Then he came back to the F.A.A. Now he is the head of safety at the F.A.A. And he has spent his career advocating for more delegation to companies.

Mike Mcrae

Ali did not help, that's for sure. But he was a result of the culture, he wasn't the cause of the culture.

Natalie Kitroeff

And Mike is very careful to point out that Ali Bahrami is not the author of this shift towards delegation, but he is a champion of it.

Mike Mcrae

He was trying to do a better job with the culture, but he ended up, in my opinion, being kind of the tipping point. Under his management, everything kind of went the other way. And it was intentional. I mean, they were — they couldn't keep doing detailed work. They didn't have the staff for it.

Natalie Kitroeff

And while he's running the F.A.A.'s office in Seattle, he is responsible for staffing this new office, which eventually handles the Max certification. And the office has such a singular focus that it is actually named after the company. It's called the Boeing Aviation Safety Oversight Office.

Michael Barbaro

Even though it's inside the Federal Aviation Administration.

Natalie Kitroeff

Right. And several current and former F.A.A. engineers had suggested to me that Ali Bahrami, as he staffed this group, put in place managers who would defer to Boeing. And that prompted a lot of engineers to not want to join this group. They were worried that under these terms, they weren't going to be able to effectively police the company.

Mike Mcrae

You know, is he wrong because of what he was trying to do or was he wrong because of the way he went about doing it? He wasn't wrong about what he was trying to do. I think he was wrong about the way he went about doing it. And he didn't put enough checks and balances in the system and keep enough expertise in the agency to be able to call bullshit when they were wrong.

Michael Barbaro

And so it's in this context and through this office that you just described that the Max and the MCAS system are being reviewed and people are trying to figure out if it's safe.

Natalie Kitroeff

That's right. This is the office that handles the Max certification.

Michael Barbaro

And so, as best you can piece together, what happens?

Natalie Kitroeff

So I had to talk to a lot of other people to figure that out. Mike left in 2013. So when I get back to New York, we begin to really piece together what is now a fairly complete understanding of how the F.A.A. missed the inherent risks in the MCAS software that contributed to the two crashes. And what we learned was there was a tremendous focus inside this office on delegating as much as possible to Boeing. And in this F.A.A. office, there are two people who are responsible for looking at flight controls, which includes MCAS.

Michael Barbaro

Two people in charge of something as important as MCAS.

Natalie Kitroeff

Yes, two people with primary responsibility for all flight controls, which is actually much more than MCAS. And what happens is there are two really experienced engineers in that role in the beginning of the Max certification, but they leave midway through. And they leave because they are frustrated with the work in the agency, and they feel like it's paper pushing. They're replaced by two engineers who are less experienced in flight controls, and one of them is a brand new hire. And on the question of whether MCAS was this important system, in the beginning, it wasn't seen as an important system at all. In the very beginning of the development of the Max, MCAS was a system that would be used in very rare scenarios that a passenger plane would almost never encounter — high speed, sharp turns. That's not something that you will experience on your flight to Seattle. And so when the first safety assessment comes in, a failure of the system is not rated as particularly dangerous. So the Max certification progresses, and as Boeing is racing to complete this plane, late in the process, managers at the F.A.A. delegate the approval of the safety assessment of MCAS back to Boeing. Meaning Boeing now has final say over the safety assessment of this system. The logic here is that this isn't really a risky system, so the F.A.A. doesn't have to be, you know, on it in the way that it was in the beginning. But at the same time, it is conducting a major overhaul of MCAS in a way that makes it much more aggressive.

Michael Barbaro

How so?

Natalie Kitroeff

So what happens is there are flight tests in 2016 inside Boeing. And they realize that they need MCAS in more scenarios than that rare one that I mentioned earlier.

Michael Barbaro

That sharp turn at a high speed.

Natalie Kitroeff

Right. They actually now need it in low-speed situations in which the plane is approaching a stall.

Michael Barbaro

Why?

Natalie Kitroeff

Because pilots at Boeing find that the Max is not handling — it's not flying the way that its predecessor, the 737 NG, did in certain dangerous scenarios in low speeds. And so they decide that they need MCAS to operate in that low-speed scenario. So Boeing looks at the potential danger of the changes internally. And what they find is that, actually, these changes don't make the system any more dangerous. That when MCAS activates in low speeds, they say, it's going to be less of a big deal than when it activates in high speeds, because lower speeds, less risk.

Michael Barbaro

Or so they think.

Natalie Kitroeff

Well, that's what they determine. And they don't actually submit a new safety review, because one is not required — because they've determined that the system has not become any more dangerous. They're also assuming that pilots are going to intervene within seconds.

Michael Barbaro

And they get to make this determination because the F.A.A. has delegated the process to Boeing.

Natalie Kitroeff

That's right.

Michael Barbaro

We'll be right back.

Natalie, once Boeing is in control of certifying the MCAS system, how does the story unfold?

Natalie Kitroeff

In the beginning, when the F.A.A. has control over the approval, when MCAS triggers, it only moves the nose down. It only moves a part of the tail of the plane by 0.6 degrees. It's because it's moving in high speeds, right? In order to have that same effect on the plane —

Michael Barbaro

At low speeds.

Natalie Kitroeff

— at low speeds, they have to move this part of the tail much more. They have to push the nose down much more for the same effect. And our understanding is that the F.A.A. engineers who were initially responsible for determining if this system was safe and for really picking it apart and looking inside it and figuring out how it works from an engineering perspective, they didn't know that MCAS could move this part of the tail by 2.5 degrees, which is a lot. They didn't understand the real intricacies of how this system worked.

Michael Barbaro

I just want to be sure I understand this. At the beginning of this process, when the F.A.A. is heavily involved in the certification of MCAS, they understand that when triggered, this software can move the plane a certain amount — a pretty modest amount. And when the certification process is delegated to Boeing, unbeknownst to most of the folks at the F.A.A., this system is being triggered in more circumstances, and it's being triggered in a way that increases what it does. And so that change kind of eludes the F.A.A.

Natalie Kitroeff

Right. We know that an engineering test pilot from the F.A.A. is familiar with the change. But because it's delegated at that point, the engineers who were originally responsible for assessing its safety don't really understand the specifics of the new system. And the rules say Boeing doesn't need to make them aware of these changes.

Michael Barbaro

So is it fair, Natalie, to say that Boeing engineers make the MCAS system riskier just as they're getting complete control over the certification of it?

Natalie Kitroeff

Yes. And it only becomes clear to key officials in the F.A.A. that they don't fully understand this system once the first accident happens — when Lion Air Flight 610 crashes into the Java Sea in October. F.A.A. engineers are looking at what happened on that flight, and they eventually get the black box data. And that data suggests that the pilots were fighting to keep the nose of the plane up as it was repeatedly pushed down by a dramatic amount each time. And so these engineers are hearing that the system MCAS was probably involved, and they go and scour their files for any description of this system. And what they find is this early safety assessment that is a review of a version of MCAS that is not capable of such dramatic movement.

Michael Barbaro

Basically, it's a different system.

Natalie Kitroeff

It doesn't look anything like what they have on file. So the F.A.A. has a bunch of meetings with Boeing executives in the week after the crash, and the F.A.A. engineers, many of them are sitting there incredulous as the company explains how this system works. But still, the F.A.A. decides that they don't need to ground the plane, partly because when MCAS triggers in a malfunction, it presents a lot like another scenario that pilots should be familiar with. It's called a runaway stabilizer. And they have a checklist — an emergency checklist for that. So what the F.A.A. believes is sufficient is to publish a notice with that emergency procedure. They say in this notice that the plane has this potential for a repeated nose-down. They do not mention MCAS by name. The agency at this point believes that the emergency procedures are going to be sufficient. But just under five months later, another Max crashed after MCAS activated. Ethiopian Airlines Flight 302 crashed shortly after takeoff when pilots again were battling an MCAS activation. After that crash in March, it took the F.A.A. longer than international regulators, including in Europe and China, to ground the Max, but they eventually do. And in the aftermath, we have seen multiple investigations that are now looking into whether there were flaws in the fundamental system, the regulatory process, and the hands-off approach that gave so much control over the approval of the plane to Boeing.

Michael Barbaro

Natalie, from everything you're saying, it sounds like the crashes of these 737 Max jets and the deaths that resulted, it really can't be divorced from this regulatory process where the F.A.A. relinquishes its authority over certifying the safety of these Boeing planes back to Boeing.

Natalie Kitroeff

It's really hard to say. The F.A.A. has said that the goal of delegation is to give away the stuff that doesn't matter. And this ended up mattering a lot. So clearly, there was a disconnect. The agency, in its own defense, has said that it

followed all of the rules and proper procedures. But I think what federal investigators and lawmakers are now looking at is whether following the rules is enough.

Michael Barbaro

Natalie, thank you very much.

Natalie Kitroeff

Thank you.

Michael Barbaro

Ali Bahrami, who ran the F.A.A. office in Seattle that oversaw Boeing and is now the agency's head of aviation safety, is scheduled to testify tomorrow before a Senate oversight committee. Bahrami and two of his colleagues are expected to be asked about the certification process for the 737 Max.

We'll be right back.

Here's what else you need to know today. On Monday, President Trump said he would nominate Republican congressman John Ratcliffe of Texas as the next director of national intelligence, despite his lack of experience in national security.

Archived Recording (John Ratcliffe)

You wrote 180 pages — 180 pages about decisions that weren't reached, about potential crimes that weren't charged or decided.

Michael Barbaro

Ratcliffe, a former U.S. attorney and small-town mayor, is best known for his outspoken defense of Trump, including his questioning last week of former special counsel Robert Mueller.

Archived Recording (John Ratcliffe)

So Americans need to know this as they listen to the Democrats and socialists on the other side of the aisle as they do dramatic readings from this report — that Volume 2 of this report was not authorized under the law to be written. I agree with the chairman this morning when he said Donald Trump is not above the law. He's not. But he damn sure shouldn't be below the law, which is where Volume 2 of this report puts him. If confirmed by the Senate, Ratcliffe would replace Dan Coats, who shielded intelligence agencies from Trump's criticism of their work, especially their conclusion that Russia interfered in the 2016 election. And —

Archived Recording

This incident tonight started at about 5:41 p.m. There were reports of shooting on the north side of the Garlic Festival area.

Michael Barbaro

Authorities in Gilroy, California, have identified the victims of last weekend's mass shooting there at a local food festival.

Archived Recording

Officers were in that area and engaged the suspect in less than a minute. The suspect was shot and killed.

Michael Barbaro

The shooter, using a legally purchased assault rifle, killed at least four people, including a 6-year-old boy and a 13-year-old girl, and injured at least 12.

Archived Recording

And it's just incredibly sad and disheartening that an event that does so much good for our community has to suffer from a tragedy like this.

Michael Barbaro

So far, the gunman's motive remains unknown.

That's it for "The Daily." I'm Michael Barbaro. See you tomorrow.