Air India Express 1344, {14 YO Boeing 737 800}, No major issues recorded
Aug 7, 2020. Dubai, United Arab Emirates, to Kozhikode, India
184 passengers & 10 infants
Weather condition: Heavy Rain {Usual in Kozhikode as it's one of the wettest places in India}

Many Indian citizens were stranded outside the country during the Covid time and in order to bring them back the Govt. Of India organised repatriate flight (Vande Bharath Flight). One among which was the Air India Express 1344, which flew from Dubai, UAE → Kozhikode, Kerala on the 7th of Aug, 2020. It was a 14 Y.O Boeing 737 800. It first flew for the Air India Express in 2006.

Story line:
On the morning of Aug 7 @ Kozhikode the empty flight with just the crew takes off @ 4:49 UTC headed for DXB. It lands @ DXB @ 8:11 UTC. It was schedules to depart after 1.5 hrs i.e., @ 9:30 UTC. But due to the Covid protocols the boarding was later than expected.

Captain:
Ex-Indian Military Pilot, worked for Air India & Air India Express since 2000

11,000 hours of total flying experience (on all flights across the career) of which 4500 on the type (on this model of flight)

Medical History: Diabetes, he was prescribed Allopathic (English) medication, but unknown to anyone he was taking ayurveda medication also, the combination of these 2 led to spiked sugar levels at times.

2009-14: There were > 9 remarks by the trainers about loosing concentration, stressing during landing etc.

First office:
- 32 YO Male
- Total flying experience of about 2000 hours
- Joined Air India Express 2 years ago
- Very very jnr in comparison to the captain in all terms

Air India Express changed the schedule of the Captain in the last moment i.e., while performing the pre flight checks. Instead of having a standby phase he was asked to fly to Doha @ 8:30 in the morning.
Company policy requires min rest period of 15 hrs between the flights. Since the DXB flight was scheduled to return @ 7:00 PM IST, the Doha Flight was shifted to 10:00 from 8:30 in order to give the 15 hour gap. Basically the late the flight would land @ Kozhikode the late it would take off to Doha the next day. So, pilot wanted to land the plane @ Kozhikode right on time, this built up a pressure in his mind. And the delayed boarding of passengers @ DXB due to the Covid protocol was causing him anxiety.
Finally all the passengers board the flight, and the flight takes off @ 10:00 UTC. On the day of flight there was heavy rain and the potential alternate airports are:
- Coimbatore
- Thirchy
- Kochi

They chose Kochi as the alternate.
Weather was very similar @ Kochi compared to that of in Kozhikode, it was raining heavily and visibility of 2500 m.
The weather update received by the ATC @ 96 Km from Kozhikode airport was:
- visibility 1500 m
- Moderate Thunderstorm
- Surface winds @ 270°
- Runway surface: wet

Kozhikode Airport:
It has a table top runway, constructed by shaving off the top of the hill. Such runways have steep drops at both the Ends & the sides, here the ground dropped 110 ft.

Every runway should have a runway end & safety area (racer). In the racer region, the ground is made up of special material to prevent airplanes from overshooting the runway. Standard racers should be 90m*90m, but in Kozhikode airport it was 71-85 m wide due to un available space. The standard min width of runway is 140 m, but Kozhikode airport had runway width of 75 m. Standard length of approach lights on the runway was 900 m which helps the pilot to detect the runway. But in Kozikode airport I was150 m. Because of so many un-standard factors in the run way it is termed as a critical airport, meaning only the Captain is allowed to operate the flight from this airport, co-pilot can only monitor.

Story continuation:
The plane failed to stop on the runway once it landed on Kozhikode

Ways to stop a aircraft:
- Airbrakes
- Thrust Reversals on the Engine
- Manual braking (Autobraking is by-default disabled in this case)
- Auto braking (pilot selects autobraking on scale of 1-4; if 4 is selected plane stops at the shortest path available)

Inorder to know what flap settings, autobrake values to use, the pilot must calculate the landing distance required value (LDR Value) @ every approach briefing. But since the pilot had flown 36 flights in and out of Kozhikode in the past 1 year. He therefore didn't do this calculation. He had sent the value of the auto braking from memory. Also, the wipers suddenly stopped working, the captain couldn't see the runway properly and hence decided to go around. It therefore increase the altitude to 10,000 ft (No clearance received from the ATC to climb to this height).

By Air India Express's protocols, if the windshield wipers aren't functioning because of rain then the plane should be diverted to an airport where the weather is clear. Since the chosen alternative airport Kochi also had bad weather, the nearest airport with clean weather was Coimbatore. Also, there was sufficient fuel as well to divert to their alternates. But no one in the cockpit discussed about the alternatives.

Note:
Take off with head wind requires minimum runway length
Landing with tail wind requires maximum landing distance (greater runway length)

ATC asked if the pilots are okay landing the flight on runway 10, but problem with runway 10 being it was smaller, doesn't have proper lights, they would be flying with tail wind here, increasing the landing distance. But since the captain wants to land the plane ASAP because he doesn't want his next day's flight to be delayed, and therefore wanted to land this plane on time. He decided to land the plane on runway 10.
Now @ Kozhikode airport,
Visibility: 2000 m
Wind: 260° @ 5 Knots
wet runway surface

Now no calculation of the landing distance done, pilots didn't brief each other, flaps and autobrakes settings set from memory.
They chose flaps down 30, whereas the correct value would have been 40
They chose auto brake 3, whereas the recommended value was max

@ 14:00 UTC the aircraft was clear to approach runway 10, @ 14:06 aircraft was

established on the localiser, ATC clear them to land on runway 10.

During landing the plane needs to follow a glide scope

The first officer disengages the autopilot @ 500ft above gnd. The pitch of the plane reduced and the decent rate increased, it was almost 1500 ft/min, whereas the ideal decent rate was 750 ft/min, as a result the plane was well below the glide scope and was too close to the ground, the gnd proximity warning system also warned them about not being on the glide scope. Seeing this warning the captain corrected the decent and the plane now went slightly above the glide scope. As a result it crossed the threshold of the Runway 10 at a height of 92ft, now the engine thrust was @61 %, the captain increased it to 81%, making the plane go even further on top of the runway in ait and not touching down. The touchdown zone would now end within another 500 ft.
so the plane is landing
- on a wet runway
- with tailwind
- actual landing distance was not calculated

Now when the captain reduced the thrust of the aircraft it had already passed the touchdown zone.
First officer said feeble “Captain, Go around”.
and by rules, when a go around call is given by either of the pilot a go around must be carried out, and after 2 go arounds the pilots must divert to an alternate airport and cannot attempt a 3rd landing. But since the captain is under pressure to land the plane ASAP he doesn’t go around. And if he goes around he would have to divert to Coimbatore. Ultimatelty because of the seniority of the captain the first officer doesn’t continue with the go around

the captain now applied max manual braking
he applied thurst reversals and shut it down so quickly before it had any impact, simultaneously lifting leg from the manual braking, reducing the braking effect.

Theories:
- He had second thoughts about going around so he slightly lifted lrg from the manual brakes,

but it was too late to get the engines back---up, but also the plane was’nt stoping in time again the captain applied thrust reversals, but this time the plane was already beyond the end of the runway and in the racer. It exited the runway at a speed of 85 Knots, way

more than what the racers are designed for. It broke off the antennas and the fence.
resulted in death of 21 people including the 2 pilots.
investigation also found that Air India was using faulty simulators for training, and these simulators weren't properly maintained and had multiple flaws in how it performed as a result the pilots were learning incorrect techniques in the simualators.

post accident:
- Reccomendation was made to improve runway lighting @ Kozhikode airport
- Increase the racer at both ends of the runway
- 37 other changes were made