

The Aviation Herald

www.avherald.com

Last Update: Monday, Aug 26th 2013 22:24Z

13935 Articles available

Events from Jun 19th 1999 to Aug 26th 2013

Incidents and News in Aviation

Next

Previous

List by:

Occurrence

Update

Filter:



Search

Crash: Sita D228 at Kathmandu on Sep 28th 2012, bird strike

By Simon Hradecky, created Monday, Aug 26th 2013 17:00Z, last updated Monday, Aug 26th 2013 17:00Z

Nepal's Aircraft Accident Investigation Commission (NAAIC) released their **final report** concluding the causes of the crash were:

During level flight phase of the aircraft, the drag on the aircraft was greater than the power available and the aircraft decelerated. That resulted in excessive drag in such critical phase of ascent lowering the required thrust. The investigation was unable to determine the reason for the reduced thrust.

- The flight crew did not maintain the airspeed above the stall speed and there was insufficient height available to recover when the aircraft departed controlled flight.

Contributory Factors

- The flight crew did not maintain V2 during the climb and so the power required to maintain the level flight was greater than it would otherwise have been.

- The flight crew did not maintain the runway centreline which removed the option of landing the aircraft on the runway remaining.

The NAAIC reported the captain (42, ATPL, 8,308 hours total, 7,112 hours on type) was pilot flying, the first officer (24, CPL, 772 hours total, 519 hours on type) was pilot monitoring, when the aircraft was preparing for takeoff from Kathmandu's runway 20 from intersection 2. During line up on runway 20 the commander noticed "there is a bird". The aircraft began takeoff roll, the commander again commented "watch out for the bird", the first officer reported being clear of the bird when the aircraft accelerated through 58 knots IAS. At 70 KIAS the first officer called Vee One, the commander began rotation the aircraft however did not lift off. At 86 KIAS the aircraft lifted off, the gear was immediately retracted, the aircraft climbed to 100 feet AGL over the next 11 seconds, the airspeed however decayed to 77 KIAS, over the next 14 seconds the crew reported a bird strike, the aircraft maintained 100 feet AGL while slowly turning, the speed decayed to 69 KIAS with the stall warning activated at 71 KIAS. The aircraft began to descend slowly, the rate of turn increased rapidly and the aircraft suddenly departed controlled flight, most likely left wing low and impacted an open area about 420 meters southeast of the end of runway 20.

A runway inspection found the remains of the Black Kite on the runway 408 meters down of intersection 2.

A CCTV surveillance camera showed a flash in the area of the right hand engine of the aircraft about 5 seconds prior to the aircraft becoming airborne.

A ground witness, professional pilot, reported that he saw an unsuccessful attempt to rotate the aircraft with the nose gear lifting off the ground and the tail nearly contacting ground, the nose gear lowering but not touching down again before the aircraft rotated again and became airborne.

The NAAIC reported that V1=Vr was 83 KIAS and V2 was 84 KIAS. The "Vee One" call thus occurred premature and below the actual V1, the aircraft thus was not able to become airborne, however, the flight data recorder as well as cockpit voice recorders (by reduction of noise) confirm the Vee One call initiated the takeoff rotation by the commander.

The NAAIC reported that the aircraft was not able to maintain 77 KIAS in level flight suggesting that one engine had failed and the other had suffered a power loss of at least 13%.

The NAAIC reported that the propeller was not found feathered, the blade pitch was at normal operating range, the damage to the propeller blades suggests that the engine had not lost all power but was operating at low power, the damage to the left hand propeller also showed the engine was operating at low power at the time of impact. The power levers found in the cockpit also indicated that none of the engines had been shut down and none of the propellers had been commanded into the feathered position.

Support The Aviation Herald

one time

Donate



Monthly support
1 €/month

Support AVH



Interview:
The human factor
named "Simon
Hradecky" and the
team of man and
machine

the right hand propeller.

The NAAIC reported that according to the load sheet the aircraft departed with a takeoff mass of 5,834kg and an estimated landing mass of 5,698kg. The load sheet indicated that no luggage had been loaded, surveillance videos however showed luggage of about 80kg was loaded and not removed before the aircraft departed the stand. Thus the takeoff weight was corrected to 5,914kg while using Nepal's standard weights for passengers. Employing European standards for passenger weights the computation arrived at a takeoff weight of 6,148kg above Maximum Takeoff Weight of 6,075kg. The NAAIC subsequently used an assumed aircraft weight of 6,200kg for performance computations.

The NAAIC analysed: "It is possible that the bird momentarily disturbed the air flow into the engine before it was struck by the propeller, causing a surge and the suspected flame seen in the CCTV footage, but the engine manufacturer considered this unlikely. The manufacturer considered that if the bird had been sufficiently close to the air intake to disturb the air flow it would have been sucked in. If the flame seen in the CCTV and accompanying 'bang' heard on the CVR were evidence of an engine surge, then another possible cause is a fuel flow problem. However, the manufacturer also commented that this type of engine was very resistant to surge."

The NAAIC analysed based on sound analysis of the cockpit voice recorder and flight data recordings that one of the engines operated at 100% rpm throughout the flight while one engine ran down to 95% rpm and a second time to 91% rpm. The NAAIC analysed that at 95% rpm the drag produced by the propeller exceeded the thrust produced.

The NAAIC analysed further that a grossly overloaded aircraft would have had a better performance than 9N-AHA during the accident flight, hence the overload alone can not explain the performance problem.

The NAAIC continued: "The drag on an engine at flight idle is greater than the drag on an inoperative engine (OEI), and in the case of 9N-AHA where the flight idle fuel flow was incorrectly set too low, the drag would have been even greater at idle (in excess of 350 lb of drag – reference section 1.16.2). It is therefore possible that at about 6,200 kg with one engine at 100% power and one engine at flight idle, there would have been insufficient thrust to maintain 77 kt, and the additional drag on one side would have affected controllability more than in the OEI case."

The NAAIC stated in the analysis, that the power loss began at about 70 KIAS and further analysed, that a power loss below V1 (83 KIAS) should have triggered a rejected takeoff. The bird impact occurred at about the time of the premature Vee One call by the first officer at 70 KIAS, there is no evidence to suggest that the crew detected a power loss while the aircraft was still on the ground, the aircraft initially still accelerated though at a lower rate than during previous takeoffs, became airborne at 86 KIAS above V2 and continued to accelerate for about 2 seconds, only then the speed began to continuously decay. The NAAIC said: "There was no evidence to suggest that the flight crew recognised that a power loss had occurred on the ground, possibly because it occurred gradually and progressively rather than instantaneously. This would account for why the takeoff was continued."

The NAAIC analysed: "For an engine malfunction that occurs on takeoff at or above V1, the POH allows flight crews to continue the takeoff or land back on the runway should it be long enough to safely bring the aircraft to a stop. There was probably between 2,500 and 3,000 ft of runway available ahead of the aircraft which should have been sufficient to bring the aircraft to a halt but the flight crew did not select this option. One reason the commander might have decided not to land was because company policy is that the takeoff should be continued for an engine malfunction at or above V1."

The NAAIC analysed: "The actual weight of passengers and baggage on board is unknown. However, it is feasible that the passengers weighed more than was recorded ... In the worst case, the TOW could have been 6,168 kg which would also have been above the higher, WAT-limited, MTOW of 6,075 kg and, in this case, takeoff performance might have been compromised."

In summary the NAAIC analysed: "No faults were found with either of the engines, there was no evidence of a bird ingestion into the engine. Both engines were producing low power at impact, both propellers were in their normal operating range. However, an insidious power reduction occurred starting at 70 KIAS which went unnoticed by the crew. Following lift off the pitch attitude was set too high for the aircraft to maintain V2, the aircraft's speed fell below V2 requiring more thrust than available to accelerate again.

The NAAIC concluded the analysis: "The investigation was unable to determine the cause of the thrust reduction."

By Simon Hradecky, created Friday, Sep 28th 2012 06:39Z, last updated Monday, Aug 26th 2013 17:01Z

A Sita Air Dornier Do-228, registration 9N-AHA performing flight 601 from Kathmandu to Lukla (Nepal) with 16 passengers and 3 crew, was in the initial climb out of Kathmandu's runway 20 when the crew reported a bird strike and the failure of an engine. The crew attempted to return to the airport and then an emergency landing at the bank of Manohara River in Koteshwor village

flames after coming to rest at approx. position N27.6808 E85.3557 at about 06:19L (00:34Z). All occupants perished, the aircraft was destroyed in the crash.

Emergency services needed 40 minutes to extinguish the fire, the bodies of the occupants are all charred beyond recognition.

The airline said the aircraft hit birds on takeoff from Kathmandu.

Nepal Police reported the aircraft caught fire after departure from Kathmandu and crashed within 2 minutes after departure.

The airport reported the aircraft caught fire in flight after hitting a bird on departure, the cause of the crash however needs to be confirmed. The black boxes have been found and recovered. The aircraft had been cleared for takeoff at 06:17L, last contact with the crew was at 06:18L. The crew reported a bird strike and the failure of an engine on climb out. The bird was identified as a black eagle (wingspan up to 70 inches/178cm, weight up to 4 lbs/1.8kg).

Nepal's Civil Aviation Authority confirmed the crew reported a bird strike.

The British AAIB announced they have dispatched two investigators to Nepal to assist in the investigation into the crash.

Ground observers reported the aircraft appeared to attempt a landing at the river bank. The aircraft was not on fire at that time until after coming to a stand still, the occupants could be heard screaming, but a few seconds later the fuel and fuel tanks ignited.

Airport sources said the crew reported a bird strike during the initial climb out of runway 20 and attempted to immediately turn back onto runway 02, about half way through the turn on single engine the crew appeared to have decided to land the aircraft at the bank of the river.

CAA Nepal and Airline Operators Association Nepal reported on Sep 30th based on preliminary investigation results, that the bird collided with the right hand engine at about 50 feet above ground (about 4440 feet MSL) causing some part to separate from the engine, the part impacted the vertical tail and disabled the rudder. This made the aircraft uncontrollable. Tower noticed the aircraft began a tight turn at that point.

Both engines and propellers side by side (Photo: AFP/Prakash Mathema):



Scenes after the crash (Photo: AP):



The remains of 9N-AHA (Photo: AP/Niranjn Shrestha):



A black eagle, photo taken in Malaysia Dec 1st 2011 (Photo: Tu7uh):



Map (Graphics: AVH/Google Earth):



Reader Comments:

By fly-safe on Monday, Aug 26th 2013 18:03Z

"The NAAIC concluded the analysis: "The investigation was unable to determine the cause of the thrust reduction."

Even the "experts" don't always know everything.

@DF...RE: Crash loads

By 4M2 on Tuesday, Oct 9th 2012 22:38Z

Many thanks for your reply which prompted me into doing a little research regarding seat safety. It seems that a seat should remain anchored in position when subjected to deceleration loads of up to 9g - which may or may not be the case with the Sita Air Do-228?

If the impact load was in excess of 9g then that would certainly indicate a very heavy forced or uncontrolled landing!

Crash loads

By DR on Tuesday, Oct 9th 2012 19:06Z

It is fairly common in a highly loaded deceleration (beyond design and certification limits) crash for passenger seat and cargo to detach and pile up in the direction of the deceleration loads. In this case forward.

Do-228 secure seats?

By 4M2 on Tuesday, Oct 9th 2012 00:58Z

Having seen a few videos and photos of the crash scene it does perhaps appear that all the passengers and their seats were catapulted to the front of the cabin.

If the seats had been more secure and particularly passengers toward the back of the cabin had been wearing seat belts (maybe all were wearing seatbelts) then for them the crash may have been survivable since the rear of the plane didn't appear badly damaged. The first images of the crash showed the rear of the plane to be fairly intact even though by that time the fire had taken hold and was spreading to the rear.

Have tests been done with Do-228's to see how firmly anchored seats are when passengers are wearing seat belts in various impact situations?

nepal!!

By Victor B on Sunday, Oct 7th 2012 20:46Z

The numerous accidents in Nepal begs another question. what are the training standards for pilots? Having first hand experience of flying in Nepal with Nepalese captains is major part of the problems are training , knowledge and aptitude. I am sorry if offended anyone but that is the bitter fact. Challenged with some serious terrain and lack of training standards these accidents will continue to happen. ICAO has to step in because the local authorities are clueless

In the in the year i was there 2000-2001 , there were 8 crashes.

e.g of standards as below

My chief pilot of my airline lost 500ft + on steep turns on his check ride. No concept what a bleeds off takeoff is . Enter the holding patten at

most of locals go abroad for training+sim but never do their checkrides . They come back to nepal , get a examiner pay min 500\$ plus per day and get checked out !
Fly on the local airlines at you own risk !

@ Marco ... ref; engine screens

By DR on Monday, Oct 1st 2012 15:48Z

Yes, bird screens are used on turbo-prop engines in none icing conditions, meaning no flight in visible moisture below 40 deg F. One was not used in the this particular design, the Dornier Do-228 as they increase fuel flow by about 1% and it would require a deicing feature. It's up to the airframe manufacture per the design requirements. If this type of engine failure/accident was more common there would be a requirement to have engine air inlet screens.

The solution to birds in this case; don't feed them next to the airport! It's the dumping of garbage in the river bed that creates the food chain which attract the large predator birds.

River bed is a dump.

By DR on Monday, Oct 1st 2012 14:50Z

The local population use the river bed near the airport as a garbage/trash dump which attracts lots of birds and rodents...a good hunting place for Hawks. It's a typical third-world country, so don't expect anything to be done about the problem any time soon.

Metal grilles?

By Marco on Monday, Oct 1st 2012 12:54Z

Sorry in advance for my ignorant comment, but couldn't any metal grilles (with an appropriate and aerodynamical form factor, that is) be put in front of an airplane's motors, in order for birds to be deviated away from the fans? Do you know whether some sort of experiments have been conducted in the past to try such a solution?

@Anonymous

By Birdman on Monday, Oct 1st 2012 11:53Z

Am surprised you aren't at your local airport(s) or a daily basis "seeding" the fields with Alka Seltzer tablets. Probably will get your "angry inch" going so you can find and flagellate it.

@Martin

By Lone Ranger on Monday, Oct 1st 2012 11:48Z

Hi Ho Silver

@Joe

By Stefano on Monday, Oct 1st 2012 10:29Z

Your argumentation is absolutely correct, but surely OEI performance at 4400 ft are still more degraded, so crew has to keep in account the maximum TOW that allow a safe OEI performance)

But the most important things is they lost the rudder, and that's fatal in a turboprop flying OEI

exterminating the bird population

By anonymous on Sunday, Sep 30th 2012 22:18Z

Its people with attitudes like that, that made the Dodo extinct.

Also, it has been mentioned by Sita Air spokesman that the plane was loaded to max capacity with a lot and heavy baggage.

By (anonymous) on Sunday, Sep 30th 2012 21:34Z

A very critical time to suffer a bird strike that low & pulling high T/O revs. wonder again if surveillance just prior to clearance would help. Or what other measures may be taken around airports. In Canada I live on the south end of a 16-34. I see many eagles & Vultures soaring in thermals estimate average height in 18x50 binocs as 5000' to 8000' They do fire air guns at Canada geese feeding in the fields but that only deters them for a short time. The risk then is they are airborne. I really think the populations of birds must be reduced. Too bad but survival of the fittest or more advanced life forms. (Supposedly us.) Now having said that how many birds were observed for perhaps days prior to this accident?

Get off your high horse already! By Uly

By martin on Sunday, Sep 30th 2012 18:54Z

"Get off your high horse already"! Does not make sense!

@M Anthony

By Kev on Sunday, Sep 30th 2012 18:16Z

I tell you why I shame the investigators: No investigation team would even consider releasing a preliminary cause 48 hours after the initial accident while data is still being collated. There has already been more than one cause reported and at least 2 different types of bird and that

Simon, sorry your right: disabled not damaged. Thanks for correcting me. As a pilot I do understand the implications of a disabled rudder. Still not convinced about any details beyond the initial birdstrike. Best we wait for all the dust to settle, get the investigation under way properly.

Factual reporting

By The H on Sunday, Sep 30th 2012 18:14Z

I'm with Simon on this one.

He reported, no doubt with his usual attention to detail, what ground observers have said. It is not the journalist's job to decide if such eye-witness reports are true or not, but it *is* their job to reproduce them and to let the reader decide.

Airplane crashes are never pleasant, but at least reports on AV Herald are never sensationalized or over dramatic. It's just a shame that so many trolls seem to inhabit the comments box here for their own sad reasons.

Loss of Rudder control... Shrapnel caused damage:

By DR on Sunday, Sep 30th 2012 16:54Z

As mentioned earlier these engines have had catastrophic uncontained failure(s) do to above design spec size bird injection. This may have caused more than one part of the powerplant system to separate. If they lost high energy rotating parts, there's a real possibility a piece of the rotating stack and/or propeller blade separated and entered the fuselage causing damage there also.

Possible additional damage to:

Hydraulics?

Control?

Structure?

Trim runaway do to electrical compromise?

It reported above there was an inflight fire; this would be the result of a catastrophic failure.

"So many experts - By Martin"

By Uly on Sunday, Sep 30th 2012 16:53Z

The 'real' experts will, of course, solve it. Who is disputing the fact that this is a "serious crash" with "multiple loss of life"?

Get off your high horse already!

@Martin

By Capt Obvious on Sunday, Sep 30th 2012 16:44Z

What experts ... The chimps commenting here probably have more expertise and professionalism as compared to the Nepalese investigative team

So many experts

By Martin on Sunday, Sep 30th 2012 15:18Z

I guess reading the postings below everyone knows more than the investigators. Could have saved money by not sending them....

This is a serious crash with multiple loss of life. Let the real experts solve it!

@kev

By M Anthony on Sunday, Sep 30th 2012 15:05Z

Why do you shame the investigators? If anyone knows what is going on, it is them. According to multiple reports from Nepal, the strike and crash was witnessed by many people. Their testimony, along with the wreckage, have no doubt made the investigation easier.

@ Kev

By Simon Hradecky on Sunday, Sep 30th 2012 15:02Z

Where did they say the rudder was DAMAGED? They said the rudder was DISABLED (big difference).

Either the actuators were failed, or the movement of the rudder was blocked, or its movement was similarly disabled, that's what I personally read into their statement. Without proper rudder deflections the engine out scenario can not be controlled.

@Kev

By pjbonner on Sunday, Sep 30th 2012 14:40Z

It does appear though that part of the top of the rudder is missing. Whether this was enough to cause it to become unusable remains to be seen.

Rudder damage, really?

By Kev on Sunday, Sep 30th 2012 14:22Z

pictures of the tail section (before the rescuers turned it upside down) all over the internet. None showing rudder damage that would render the aircraft uncontrollable. Bit soon to release any preliminary investigation results 48 since the accident. Better to wait until all information is collated and examined before drawing conclusions. Shame on the CAA Nepal and Airline Operators Association Nepal.

Bird strikes

By anonymous on Sunday, Sep 30th 2012 12:52Z

Ethiopia flight 604 went down as a direct result of bird strikes, and not even big birds for that matter.

@Palton

By Igrochal on Sunday, Sep 30th 2012 07:37Z

Go, read the ATSB report on VH-LQH crash at Toowoomba. I mean, read it, not just scan the synopsis. Then come back here and say that Aussie was just another cheap pilot in a crappy airplane. And that no competent pilot in his place would have problems flying a plane with one engine out, at or near Vmc, and in a challenging environment (hot/high).

Or alternative oblige everyone here by waiting for facts before apportioning blame.

@Palton

By The Legacy on Sunday, Sep 30th 2012 04:23Z

Seriously, you've forgotten what happened to the flight that ditched in the Hudson River? Dual engine failure due to bird strikes. This may be that case.

@palton

By Michael Anthony on Sunday, Sep 30th 2012 02:30Z

Its been two days since the crash and you have already solved it. Only a fool would jump to such conclusions.

Bird strike is not the cause

By Palton on Saturday, Sep 29th 2012 20:13Z

One bird won't drop a plane. Twin engine aircraft wont drop, due to one engine fail. Cause must be pilot error. Cheap pilots were not skilled enough to handle situation.

Concerned

By Loadmaster on Saturday, Sep 29th 2012 19:46Z

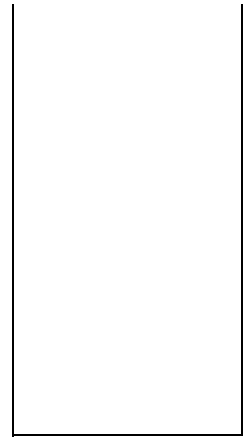
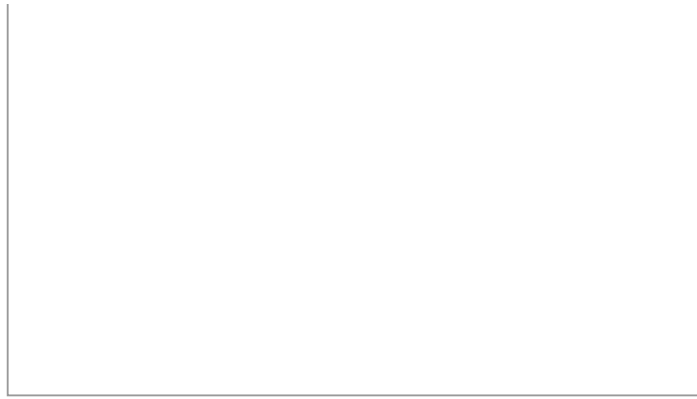
Agreeing with Steve Hughes, Rightwinger, & Billy Gracie. Reporting on the extreme suffering of the victims is not at all up to Simon's usual very high standard.

Only the first 30 comments are shown to reduce server load. [Click here to show the remaining comments](#)

Add your comment: (max 1024 characters)

Your IP address 184.66.100.24 is being tracked. We reserve the right to remove any comment for any reason. Profanities, personal attacks (against any physical or legal person), discussions about site policies, false statements or similiar as well as copyrighted materials from third parties will not be tolerated, those messages will summarily be deleted. Links and mail addresses are not permitted and will not appear in the display, posts trying to circumvent the restriction of links/mail addresses will be removed. We ask for your valid e-mail address in the email field. This address is only used by us to establish contact with you in case of further questions, it will not be displayed anywhere or be used otherwise.

Your Name:
Your Email:
Subject:
Your comment:



[Post Comment](#)

[Return to Home](#)

Get the news right onto your desktop when they happen

[Subscribe](#)

[Login](#)

[F A Q](#)

[Contact](#)

[Impressum](#)

© 2008-2013 by The Aviation Herald, all rights reserved, reprint and republishing prohibited