

ALERT BULLETIN

AB 2013:39/10-1

12/6/13

1110487, 1102409, 1077866, 961669, 842437, 770104

TO: FAA (AFS-200)

INFO: FAA (AFS-230, AVP-100, AVP-200, AFS-400), A4A, ALPA, AOPA, APA, ASAP, ATSP, ATSG, CAPA, EAA, HAI, IATA, ICASS, IFALPA, IPA, NAFI, NATCA, NBAA, NTSB, RAA, SWAPA, USAPA

FROM: Linda J. Connell, Director
NASA Aviation Safety Reporting System

SUBJ: Automation and Situational Awareness

We recently received an ASRS report describing a safety concern which may involve your area of operational responsibility. We do not have sufficient details to assess either the factual accuracy or possible gravity of the report. It is our policy to relay the reported information to the appropriate authority for evaluation and any necessary follow-up. We feel you should be aware of the following:

ASRS has received a number of reports in which flight crews appear to have focused on the autoflight system to such an extent that situational awareness was lost during critical phases of flight.

(ACN 1110487) A B737NG being vectored for an ILS approach failed to level at 3,000 FT until established, as cleared. When the "low altitude alert" sounded, ATC advised the crew of same and issued a go-around.

(ACN 1102409) B757 flight crew described their experience related to apparent inability to fly visual approaches properly.

(ACN 1077866) Air carrier flight crew turned in the wrong direction departing on the Newark One Runway 22L/R departure. Captain attributed the error to dependency on LNAV and complexity of the charted departure procedure.

The ASRS database contains several other similar type reported events. The following are other sample previously reported events (ACN 961669, ACN 842437, and ACN 770104).

(Keywords: Automation and Situational Awareness)

To properly assess the usefulness of our alert message service, we would appreciate it if you would take the time to give us your feedback on the value of the information that we have provided. Please contact Dennis Doyle at (408) 541-2831 or email at dennis.j.doyle@nasa.gov



Aviation Safety Reporting System
P.O. Box 189 | Moffett Field, CA | 94035-0189



ACN: 1110487

Time

Date: 201308

Place

Locale Reference.Airport: ZZZ.Airport

State Reference: US

Altitude.MSL.Single Value: 3000

Environment

Aircraft 1

ATC / Advisory.Tower: ZZZ

ATC / Advisory.TRACON: ZZZ

Make Model Name: B737 Next Generation Undifferentiated

Component 1

Aircraft Component: FMS/FMC

Component 2

Aircraft Component: Altitude Alert

Person 1

Function.Flight Crew: Pilot Flying

Function.Flight Crew: First Officer

ASRS Report Number: 1110487

Person 2

Function.Flight Crew: Pilot Not Flying

Function.Flight Crew: Captain

ASRS Report Number: 1110499

Person 3

Function.Air Traffic Control: Approach

ASRS Report Number: 1109821

Events

Anomaly.ATC Issue: All Types

Anomaly.Deviation - Procedural: Published Material / Policy

Anomaly.Inflight Event / Encounter: CFTT / CFIT

Detector.Person: Air Traffic Control

Result.Flight Crew: Took Evasive Action

Result.Air Traffic Control: Issued New Clearance

Result.Air Traffic Control: Issued Advisory / Alert

Narrative 1

During preflight the FMS would not accept initialization from the ACARS, requiring me to manually enter all data. The route, however, did autoload. Strange equipment notifications [enroute] prompted a call to Dispatch concerning whether or not the aircraft was reporting its position; it wasn't. I now had a slight doubtful feeling concerning system functionality.

ZZZ Airport was reporting approximately 400/1 mist/drizzle. We briefed ILS PRM XL approach. All checklists were accomplished well in advance of approach and we were descending in level change mode when we were cleared for the ILS. I tried to accomplish the [company directed

mental reminder procedure or "mnemonic"] "down to the line" (to assure appropriate Lateral/Altitude/Vertical Navigation Mode/Speed intervention configurations) but we were below 4,000 FT and when I tried to do so this VNAV didn't engage. We both looked at the approach and noted that VNAV wouldn't work since the intermediate fix (prior to ZZZZZ Intersection) had an altitude of 4,000 FT which we were already below.

I then selected APP, we both acknowledged approach mode and I saw the white Glide Slope armed [indication], we had previously intercepted the LOC [to satisfy] the "Lateral Nav" portion of the mnemonic procedure. Approaching ZZZZZ Intersection something didn't feel right and I started re-checking/cross checking the MCP when the "LOW Altitude" alert was issued by ATC. We accomplished a missed approach at this point. The next approach went just fine.

Callback 1

The First Officer advised he now believes the FMS anomalies addressed in the beginning of his report were not a factor in the eventual CFTT event although, at the time of the event, they had cast a pall of mental skepticism that compounded efforts to understand what was taking place when certain modes failed to engage as expected. He believed the mental distractions were complicit in his failure to scan raw data that would have illuminated their predicament.

The reporter expanded on his comments regarding the company SOP mnemonic utilized to insure autoflight compliance with the lateral and vertical paths, airspeed and altitude constraints of an IAP. In particular, in this instance, to assure compliance with step down fixes prior to Glide Slope intercept using VNAV. Specifically the mnemonic requires the flight crew to assure: Lateral track compliance armed or active via VOR/LOC; altitude alert initially set to field elevation +100' to allow VNAV to comply with any procedural altitude restrictions prior to the FAF/Glide Slope intercept altitude (but is subsequently reset to the MAP altitude at Glide Slope intercept/FAF passing); the appropriate vertical nav (VNAV) mode is engaged, and; airspeed window is set per aircraft configuration and vertical path mode.

The reporter clarified that the approach clearance from ATC was "cleared for the ILS approach, descend and maintain 3,000 FT until established." At that point, 3,000 FT was selected in the altitude alert window, VOR/LOC was armed and, shortly, went active. Shortly after LOC was active they reset the altitude alert to field elevation +100 FT per the mnemonic.

At the time FE+100 was set 4.5NM from ZZZZZ Intersection, the GS intercept fix, was the active waypoint and had a published and programmed crossing restriction of 4,000 MSL. When the First Officer attempted to engage VNAV, however, they were already below 4,000 FT on their way to their cleared altitude of 3,000 FT MSL, thus VNAV would not engage and the FMS vertical mode remained in LVL CHG and, as previously configured, the jet obediently continued its descent toward field elevation +100 FT with the throttles at idle.

The reporter, when he started not "feeling" right and was reviewing the MCP (Mode Control Panel) also noted the full scale low deflection of the raw data Glide Slope signal and concurrent with the Low Altitude Alert warning from ATC initiated the go-around

Narrative 2

The flight was an all nighter. The weather approximately 400/1, drizzle and mist. The approach was properly briefed, and all checklists complied with. I was the pilot monitoring, the First Officer was the flying pilot. The First Officer had selected 'Level Change' while descending.

When cleared for the approach, he accomplished [the SOP mental reminder mnemonic], but VNAV would not engage when selected. Approach mode was then selected although, looking back at it, the switch was not illuminated (the illumination turns off when the approach mode engages).

When I switched to Tower at ZZZZZ Intersection, we were told they had a low altitude alert. Not immediately seeing the problem, we elected to go-around. Looking at the flight director, both

needles were centered. I simply had not looked at how the approach had been set up on the MCP close enough. The First Officer later told me that the level change mode had remained selected, which explains why everything was centered and the aircraft was dutifully descending to the selected altitude of field elevation per the [mnemonic] check. We executed a missed approach, and the next approach was perfect.

This is the first red-eye I had flown. While I do not wish to say I was fatigued, I definitely had been without sleep for close to 24 hours. I simply could not get to sleep during the day, and had been up since about XA: 30 AM EDT. Sleeping during the day seems to be difficult for me, and lack of sleep certainly had an impact on how well I was performing (or not performing) my duties as PM, although I did not feel at all sleepy at the time, nor did I feel fatigued. I will surely attempt to avoid all red-eyes in the future.

One thing I will include on all approaches in the future is a mental or verbal verification of the final approach fix crossing altitude at the time of crossing. I cannot believe we both missed something so obvious, but we did.

Narrative 3

I was working all the radar positions near the end of my mid shift. The B737 came in from the West. Most of the "red eyes" had already landed, only a few stragglers were left. I believe I had five airplanes at the time I cleared the B737 for the approach. Weather was low.

I initially sent the flight direct to ZZZZZ1 Intersection. I then turned him in and cleared him for the ILS XL approach. I don't recall if my instructing for the frequency change to Tower were "at ZZZZZ Intersection" or to "contact Tower now." As I was looking at my options with the other aircraft on frequency the 737 started descending. I didn't notice it initially. The Low Altitude alert went off, and I saw he was descending through 1,900 FT MSL and he was still outside ZZZZZ Intersection. I IMMEDIATELY gave the alert phraseology and waited for a reply. I think I waited a couple of seconds for a response (which seemed like forever), then I called the Tower.

All locals were combined to LC2. I didn't wait for a break and said something to the effect of "THAT ONE [low altitude alert] IS REAL!!!" (Note: We have an exceptional amount of such alarms around the airspace, including at ZZZ Airport for low altitude alerts, Conflict alerts, and even Military Intercepts inside the markers at ZZZ Airport. They've been reported without resolution or repair, which leads to complacency because there are SO many of them). The Tower Controller said he had already issued the alert. It was an anxious few sweeps as it took the aircraft a little time to climb, and my heart was beating hard because I thought this aircraft was going to crash. The lowest the aircraft got was 1,500 FT MSL (about 400 FT AGL) and at his lowest point, he was still about 1 mile outside the marker.

Combined with the two recent high profile approach/landing crashes this would've made the third if you subscribe to the axiom that these things come in threes. The Tower Controller saved this crew's lives. By my estimate, the aircraft was 4 radar hits (~22 seconds) from hitting the ground. He was still traveling at 175 knots. There are high tension wires near this area, and a 1,300 FT MSL smoke stack just offset to the north of where this aircraft was when he started climbing.

Callback 3

The reporter clarified that each of his clearances to the flight, i.e. "direct to ZZZZZ1 Intersection" and the heading to "...intercept the localizer, cleared for the ILS approach..." included an altitude to maintain; 5000 MSL in the clearance to ZZZZZ1 Intersection and to "...maintain 3,000 FT (100 FT above the Glide Slope intercept altitude at ZZZZZ Intersection) until established" on the approach clearance. He did not recall whether he further cleared them to contact the Tower with the approach clearance or to do so at ZZZZZ Intersection. This understandable memory lapse may have played a part in the ultimately near disastrous nature of the event.

The reporter initially attempted to transmit the Low Altitude Alert himself, stating he received the

alert as the jet passed through 1,900 FT MSL (~900 FT AGL) some seven miles short of the runway. He waited an appropriate length of time for a response and then, using the land line to the Tower, advised the Local Controller, in strong fashion, stating "this one's for real!" The Local Controller responded he had just issued the alert and, in addition to providing the Alert verbiage, had directed them to go-around. He stated the flight was ~4-600 FT AGL and still outside ZZZZZ Intersection at the point they initiated the go-around.

He advised that, despite the early AM hour and nearing the end of his shift, he did not feel fatigued or over-tasked due to the modest amount of traffic and his personal comfort with varying diurnal cycle shifts. He believed he had failed to notice the continued descent earlier simply because his attention was re-directed to subsequent flights he was actively working.

Although he didn't believe that unwarranted Low Altitude Alerts were frequent enough to make controllers complacent he, nonetheless, used the phrase "this one's for real" when advising the Local Controller of his serious concern.

Synopsis

A B737NG being vectored for an ILS, failed to level at 3,000 FT until established, as cleared. When a low altitude alert sounded the Approach Controller, no longer able to contact the flight, promptly called the Tower who advised they had done, so and directed a go-around as the flight was passing 1,400-1,600 FT MSL (4-600 FT AGL) and continuing their descent while still one mile outside the FAF/glide slope intercept altitude of 2,900 FT MSL. Difficulty in utilizing a company directed memory aid intended to insure proper autoflight configuration and a resulting improperly set altitude alert at field elevation +100 FT likely contributed.

ACN: 1102409

Time

Date: 201307
Local Time Of Day: 1801-2400

Place

Locale Reference.ATC Facility: ZZZ.TRACON
State Reference: US

Aircraft 1

ATC / Advisory.TRACON: ZZZ
Make Model Name: B757-200

Person 1

Function.Flight Crew: Pilot Not Flying
Function.Flight Crew: Captain
ASRS Report Number: 1102409

Person 2

Function.Flight Crew: Pilot Flying
Function.Flight Crew: First Officer
ASRS Report Number: 1102417

Events

Anomaly.Deviation - Track / Heading: All Types
Anomaly.Deviation - Procedural: Published Material / Policy
Anomaly.Deviation - Procedural: Clearance
Detector.Person: Flight Crew
Result.Flight Crew: Became Reoriented

Narrative 1

For the second time in the past several weeks I've had to take the airplane after the pilot flying lost situation awareness on approach. We were being vectored for an approach to XXL, the First Officer [was] Pilot Flying (PF). Our heading was roughly perpendicular to the final approach course...5-8 miles from the final approach course, Approach asked us if we saw the airport. I looked to the PF to see if he wanted to accept the visual. He didn't say anything and was obviously looking for the airport so I reported back to Approach that we were looking for the field. The Controller then came back with the clearance to fly heading 030 to intercept the localizer. The PF then said he had the airport so I called Approach to relay that. Approach then cleared us for the visual to XXL. In the meantime the pilot flying still continued flying toward the final approach course without commencing a turn toward the airport. I became concerned about flying through the localizer, so I directed him to start turning, now. He started turning, but too slowly, and I instantly realized I had a problem. I increased the urgency level of my directions to not overshoot, but it was as though he was in some kind of trance, just as was the pilot in my previous experience. He just didn't respond to commands, including "descend now" and "slow down" because we were not descending or slowing for the approach. So I had to take the airplane.

As a result of the similar experience a few weeks ago, I now brief that I want the airplane configured and slowed early until we get to know each other. Unfortunately that's not always possible.... In our lengthy debrief this evening [the First Officer] said that he'd thought about getting slowed earlier, but didn't follow through on it. I was busy making the runway change so I didn't think anything was out of the ordinary as we got within 10 miles of the final approach

course. [The First Officer] was flying the approach exactly as I would have done at that point. The problem in both cases is the sudden, and inexplicable, loss of situation awareness in the approach environment. It was like a switch being thrown in both cases. One minute we're fine, the next it's DEFCON 5. I guess I should be thankful that at least we've been high and fast, rather than the other condition, but this evening if I hadn't intervened we'd have blown through all three 36 final approach courses, and I was appalled at that prospect to put it bluntly.

Why are people screwing up simple visual approaches? These are nice guys, sharp guys. The very best guys. They have to be, to be here. But something about flying this airplane, or the training thereof, is having a hypnotic effect in these situations, and I end up scrambling at the conclusion of a perfectly normal and uneventful flight. I know it's only twice, and that's not exactly a trend, but I'm extremely tired of filing reports, not to mention the jolt of adrenalin in the process. I don't know if people are being warned off of flying visual approaches in training, or something else is going on. I don't think fatigue played a part in either of these incidents. In both cases weather was good. One airport was a sleepy outstation and we were the only airplane in the sky; the other a busy hub airport with a lot of traffic, but nothing out of the ordinary. Visual approaches are fact of aviation life. They happen. It's all well and good to emphasize use of automation and to "back up" visuals with instrument approaches, but the ability to look out the window and manipulate the controls and throttles in such a way as to plant the mains on the runway in the appropriate manner is still an essential part of flying. Not to mention knowing where you are, and where you're going....

I guess I will emphasize and re-emphasize situation awareness. My question is: does it take special emphasis to accomplish something so basic and intrinsic to what we do?

Narrative 2

[I] lost situational awareness and did not hear clearance to turn to heading approaching ZZZZZ Intersection when cleared for approach on Runway XL. Captain directed turn, descend, and configure. Went visual on the approach and Captain continued to direct a turn to the left to deconflict with traffic then took aircraft for landing.

[I] just completed 6 month training but had not flown in more than 3 weeks and no landings in 2 months due to assignments with high mins captains. Deadhead flight evening before was delayed due to weather. Hotel air conditioning system broke during middle of night. After late arrival I woke up after only 5 hours of sleep due to excessive heat in the hotel.

Synopsis

B757 flight crew described their experiences related to apparent inability to fly visual approaches properly.

ACN: 1077866

Time

Date: 201304

Local Time Of Day: 1801-2400

Place

Locale Reference.Airport: EWR.Airport

State Reference: NJ

Altitude.MSL.Single Value: 4000

Environment

Flight Conditions: VMC

Aircraft 1

ATC / Advisory.Tower: EWR

Make Model Name: Commercial Fixed Wing

Person 1

Function.Flight Crew: Pilot Not Flying

Function.Flight Crew: Captain

ASRS Report Number: 1077866

Events

Anomaly.Flight Deck / Cabin / Aircraft Event: Other / Unknown

Anomaly.Deviation - Track / Heading: All Types

Anomaly.Deviation - Procedural: Clearance

Detector.Person: Air Traffic Control

Result.Flight Crew: Became Reoriented

Result.Air Traffic Control: Issued New Clearance

Result.Air Traffic Control: Issued Advisory / Alert

Narrative 1

Two major points here: 1) I'm tired of flying around with people who are predisposed to let LNAV and automation lead them around by the nose, and 2) Charts have gotten ridiculous! We were departing EWR; it was the First Officer's leg. We were late, but I really try to provide a laid back, don't rush CRM posture. We did all the things we were supposed to do, but I guess we didn't spend 15 minutes reading every word on the NEWARK ONE 22L/R departure page. Come on, this chart is a triple folded, 10-inch wide encyclopedia. The only important piece of information on that poster sized document is what to do on takeoff, yet it's practically hidden in a box towards the bottom of the page. Who cares about where all those nav aids and fixes are? It's a "takeoff, fly some headings, radar vector departure," yet the page is clogged with things that have no true bearing on what you're actually being asked to do! When you consider the congested airspace in that area, it's critical you don't turn the wrong way after takeoff, which is exactly what we did. Why we did that, I don't know. We're human I guess, but at 400 FT the First Officer said LNAV. I immediately furrowed by brow, scratched my head and thought, "Okay maybe I missed something." But I went ahead and punched LNAV and looked down at the LEGS page on my side and saw LANNA at the top. I think I said something like, "That doesn't sound right," while our VSI was pegged because we were climbing like a fighter since we only had twenty-some people onboard.

While we were in the right turn, obviously towards the wrong place, Tower doesn't say anything like, "Company, where ya going?" Instead they tell us to contact Departure. I'm still sitting there not feeling like this is going well while the First Officer is climbing and turning right toward an RJ

crossing our nose from left to right. He's still a bit away, but my fighter pilot brain is telling me we're pulling too much lead on him and this looks like it's going to be unusually close. I say something to the First Officer like, "Watch that guy," pointing at the RJ, when I hear Departure say "Company, Flight Number. "I answer and he says, "Did Tower give you a heading?" All my senses now tell me my first gut feeling was correct and I answer something like, "Ah, we're checking," while Departure rapidly rattles off, "Stop at 4,000 FT; turn left to 270; traffic 12 o'clock." I told him we had him in sight and he says something like, "You guys need to be careful." He vectored us around a little more and handed us off without any indication that we were in real trouble, but I think I know better.

So, back to point number one. When I first was blessed to be a part of this fine group of pilots, the captains I flew with all told me, "Never trust that box." And we didn't. We used our brains to fly the airplane. Now however, we bow to that thing! This is the second time this has happened to me and yes, of course it's "my fault," but both times it's because the first officers just let LNAV lead them around. These are not RNAV departures, they are heading departures but we've brainwashed everyone to think, "Just hit LNAV and it will be all right." It's not. Please don't tell me, a "proper briefing" would've solved all this because we've reached briefing overload. [Pilots] are more worried about doing all the briefings than paying attention to actually flying the airplane. Make all charts one page with a very simple, succinct depiction of the required departure procedure in the middle of the page in a manner that a human can understand. Ban the use of LNAV in highly congested airspace. The First Officer didn't see the RJ because he was face down in the instrument panel following the FD LNAV guidance. When all this happened, his first reaction was to put on the autopilot and start reading the departure chart to see where we screwed up. I had to ask him to let it go until we get higher.

If crews have repeated issues with a departure or arrival procedure it might not be the crews entirely at fault and maybe someone ought to examine why and fix the procedure! How many [reports] do we need to get about some error being constantly made when someone ought to be pointing to the root cause of the error and demanding it be removed or changed to prevent further issues? We're not the first people to miss the heading and won't be the last.

Synopsis

Air carrier flight crew turned in the wrong direction departing on the Newark One Runway 22L/R departure. Captain attributed the error to dependency on LNAV and complexity of the charted departure procedure.

ACN: 961669

Time / Day

Date : 201107
Local Time Of Day : 1801-2400

Place

Locale Reference.Airport : LGA.Airport
State Reference : NY
Relative Position.Distance.Nautical Miles : 5
Altitude.MSL.Single Value : 1400

Environment

Flight Conditions : VMC
Weather Elements / Visibility : Cloudy
Weather Elements / Visibility.Visibility : 6
Light : Night
Ceiling.Single Value : 2500

Aircraft

Reference : X
ATC / Advisory.TRACON : N90
Aircraft Operator : Air Carrier
Make Model Name : A320
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Final Approach
Route In Use : Visual Approach
Airspace.Class B : LGA

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Flight Instructor
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 7000
Experience.Flight Crew.Last 90 Days : 200
Experience.Flight Crew.Type : 2500
ASRS Report Number.Accession Number : 961669
Human Factors : Human-Machine Interface
Human Factors : Distraction

Human Factors : Confusion
Human Factors : Situational Awareness

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 11800
Experience.Flight Crew.Last 90 Days : 150
Experience.Flight Crew.Type : 4800
ASRS Report Number.Accession Number : 961294

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Procedural : Published Material / Policy
Anomaly.Inflight Event / Encounter : Unstabilized Approach
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Automation : Air Traffic Control
Detector.Person : Flight Crew
Detector.Person : Air Traffic Control
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Returned To Clearance
Result.Flight Crew : FLC Override Automation
Result.Air Traffic Control : Issued Advisory / Alert

Assessments

Contributing Factors / Situations : Airport
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Manuals
Primary Problem : Human Factors

Narrative: 1

As pilot flying I briefed and prepared for the LDA-A at LGA. ILS 22 was also briefed and loaded in the secondary route. New York Approach said to expect a visual approach to Runway 22. On base leg with field at in sight at 2,000 FT we were cleared for a visual approach to 22. At this time I called for the secondary approach to be activated. Outer Marker COHOP on LDA-A is 1,600 FT, Outer Marker GREKO on ILS 22 is 1,900 FT. In the transition to the visual (backed up by the ILS 22) I thought I needed to cross GREKO at 1,600 FT, placing the aircraft high on profile. I selected -1,800 FT/minutes Vertical Speed to intercept glide slope from above. As the Captain cross-checked he realized the aircraft was low on profile. At that time (approximately 1,600 FT) I disconnected the auto pilot, arrested the descent, and maintained level flight until re-intercepting the glide slope (at approximately 1,400 FT), and landed normally. Approach Control and LGA Tower informed us they received a low altitude alert.

Spend more time flying the aircraft and less time managing the automation. Had I

tracked the LDA-A course and flown a Visual Approach it would have eliminated a high work load in a time compressed situation.

Narrative: 2

I (pilot not flying) went to the MCDU and activated the secondary route. I then received a message that there was an ILS/RWY mismatch. This was due to the fact that, per the airport briefing page, we were to hard tune the LDA frequency in the RAD/NAV page for the LDA-A approach. I selected the RAD/NAV page in the MCDU and deleted the LDA IDENT/FREQ and then the ILS information automatically displayed.

I [then] noticed that we were at approximately 1,600 MSL and descending. I alerted the First Officer that he was low and then noticed that the speed was approaching overspeed. I advised "watch your speed, you're fast". At this point the First Officer disconnected the autopilot, leveled and slowed the aircraft, and we intercepted the glide slope from below.

I didn't remember if approach had handed us over to the Tower so I queried approach if he wanted us to go the Tower? His reply, after a short moment, was to ask if we were still with him. He said he had a low altitude alert and to contact the Tower. After I switched to Tower frequency, the Controller said that he'd been trying to contact us and that he had had a low altitude alert and that we had been too low.

Synopsis

An A320 flight crew, caught up in autoflight manipulation and company mandated airport procedural requirements, descended below the glide slope towards terrain triggering low altitude alerts from both Approach Control and the Tower.

ACN: 842437

Time / Day

Date : 200906
Local Time Of Day : 0001-0600

Place

Locale Reference.Airport : RKSI.Airport
State Reference : FO
Altitude.MSL.Single Value : 1600

Environment

Flight Conditions : IMC
Weather Elements / Visibility : Fog
Weather Elements / Visibility.Visibility : 1
Light : Night
Ceiling.Single Value : 300
RVR.Single Value : 3000

Aircraft

Reference : X
ATC / Advisory.Tower : RKSI
Aircraft Operator : Air Carrier
Make Model Name : B747-400
Crew Size.Number Of Crew : 4
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Cargo / Freight
Nav In Use : FMS Or FMC
Nav In Use.Localizer/Glideslope/ILS : ILS DME "Y" RWY 15L CAT II&III
Flight Phase : Initial Approach
Flight Phase : Final Approach
Airspace.Class B : RKSI

Component

Aircraft Component : Autopilot
Aircraft Reference : X
Problem : Improperly Operated

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 13326
Experience.Flight Crew.Last 90 Days : 37
Experience.Flight Crew.Type : 2237
ASRS Report Number.Accession Number : 842437
Human Factors : Fatigue
Human Factors : Distraction
Human Factors : Confusion
Human Factors : Training / Qualification

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Not Flying
Function.Flight Crew : Relief Pilot
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 12000
Experience.Flight Crew.Last 90 Days : 400
Experience.Flight Crew.Type : 3500
ASRS Report Number.Accession Number : 842449
Human Factors : Fatigue

Person : 3

Reference : 3
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Not Flying
Function.Flight Crew : Relief Pilot
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 12600
Experience.Flight Crew.Last 90 Days : 158
Experience.Flight Crew.Type : 1600
ASRS Report Number.Accession Number : 842450
Human Factors : Fatigue

Person : 4

Reference : 4
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 842693

Events

Anomaly.Inflight Event / Encounter : Unstabilized Approach
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Automation : Aircraft Terrain Warning
Detector.Person : Flight Crew
Detector.Person : Air Traffic Control
When Detected : In-flight
Result.Flight Crew : FLC complied w / Automation / Advisory
Result.Flight Crew : Executed Go Around / Missed Approach
Result.Air Traffic Control : Issued Advisory / Alert

Assessments

Contributing Factors / Situations : Company Policy
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Weather
Primary Problem : Human Factors

Narrative: 1

RKSI was reporting 1600-1800 RVR with CAT II approaches in use. The Captain was to do the approach to the ILS DME "Y" Runway 15L CAT II&III using the autopilot to an autoland. The approach had us cross DANAN at 5000 FT then descend to cross JUINN at 2600 FT. Then to down to 1600 FT for glideslope intercept altitude. We flew as published until we were on the localizer all was normal, 1600 was set in the altitude alert window, and the glideslope had not yet come alive. Approach told us to contact the tower, while I had my head down to switch frequencies; all of a sudden I hear the third pilot yell "Glide path". I looked up to see us descending with the glideslope indicator full up deflection. I said "Pull up" "Go Around." Immediately we got "TERRAIN" "TERRAIN" followed shortly by "TOO LOW TERAIN" "TOO LOW TERAIN" on the GPWS. I again said, "Pull up, Get it UP Now". All this happened very quickly, there was no slow gradual decent, or slow deviation from profile. One moment all was normal then all hell was breaking loose. With us now climbing, I asked about selecting Flaps 20 and the for the gear to be raised. The third pilot was calling for the same thing only louder, and he called for moving the speed bug up because the TOGA button had never been pushed. I told the tower "we're going around." We were now about 900ft and I asked "do you want LNAV & VNAV"? The Captain said yes, so I selected LNAV & VNAV. I now noticed we were heading far to the right of course, and asked, "Where are we going?" "We need to turn left and get back on course. During this the tower asked for the missed approach. I said "glideslope." As we are turning back the tower asked "Say Heading" I told them we are turning back to course. She said "never mind" "Fly present heading, which was 190. She then said "Say Intentions" I told her "We would like vectors back for another approach." we did so to a normal landing.

Narrative: 2

This flight was a four person crew, Captain, First Officer, Third Pilot, and a Fourth Pilot. I was the Third Pilot. The following is my best memory of the events occurring during the approach and missed approach at landing at RKSI. The flight began as the First Officer's leg but prior to descent the Captain became the flying pilot and the First Officer became the non-flying pilot. This change was made to facilitate a Cat II ILS to 15L. After nearing RKSI we received radar vectors and were cleared for the approach. We were descending in Flight Level Change and the First Officer set the mode control panel (MCP) altitude to 1600FT, the glideslope intercept

altitude. The flight progressed normally until shortly after turning final. While on final we descended below intercept altitude prior to glideslope capture. ATC radioed us with some weather information. During that radio exchange I noticed that we were descending below the 1600FT intercept altitude. I interrupted the radio exchange and announced that we were too low. The First Officer raised his left hand over the center console as though to inform me that he was communicating with ATC on the radio. I called out "Too low. We are too low," two more times. During the time I made the too low announcements I checked the MCP ALT and noticed that it was reading 100FT. The Captain responded by adding some thrust. Shortly after that, the Fourth Pilot announced you are still sinking, ATC then made some radio calls advising us that we were too low and stop your descent. During those ATC too low calls some aircraft EGPWS warnings began. At this time I released my seat belts so I could lean forward to reach the stick and thrust levers. I did not actually touch the controls as the Captain pitched the aircraft up and began climbing at that time. During that climb the glideslope captured and we continued the climbout. While climbing ATC called two or three times to ask the reason for the missed approach. At the Captains direction the First Officer transmitted Too Low. Shortly after those radio calls ATC again called us two or three more times asking our heading, which was deviating well to the right. The First Officer told the Captain you are not following the course. ATC then asked our intentions; I suggested we get vectors for another approach. The First Officer made that request and we were cleared to fly our present heading and were given an altitude assignment. During this climb I called "Positive Climb," the Captain responded "Gear Up," which the First Officer complied with. I suggested the use heading select and that we bug the speed up. The plane was then cleaned up as we climbed to our assigned altitude. During this climb the Fourth Pilot suggested that everyone take a moment to reset and get ready for the next approach. Once established on downwind I suggested that we reselect the ILS approach in the CDU. The First Officer very quickly did so, with a FAF extension. As we approached the approximate position of a base leg I suggested that we begin slowing from our speed of 235KIAS. The Captain called for Flaps 1 and began configuring for the approach. The Captain and First Officer then executed a normal Cat II ILS to Runway 15 to an autoland.

More than 13 hours on the plane. The Captain had not flown the actual plane in quite some time. The First Officer had not flown the actual plane in several months. Both pilots were current via the simulator. The First Officer and Captain did not follow company procedures to the letter. The duties were somewhat intermixed. The Captain was slow to respond to the 'Too Low' call outs from the Third Pilot and the 'You Are Still Sinking' call from the Fourth Pilot. The Captain did not follow correct company procedures for a missed approach. The First Officer did not make required call outs when the altitude and heading began to deviate.

Insure that all crewmembers follow company procedures so that deviations are more quickly noticed and reacted to. Suggest that attention be given to crew pairings to insure that a situation does not exist where neither pilot has flown the plane in a long time. The Third and Fourth Pilots should be more assertive when they see deviations beginning.

Narrative: 3

I do not know how the aircraft on autopilot set up for a CAT II approach could be allowed to descend below glide slope to the extent it was with the inaction of the flying pilot to correct the situation after warnings from First Officer, myself, other

pilot, Tower and GPWS. I believe the Captain misread the PFD glideslope indications and thought he was above it and operated the autopilot in such a way to descend to catch the glideslope when he was actually below it. Failure of a correct situational awareness to the proximity of the ground and lack of proper interpretation of instruments led to a tunnel vision based on misinterpretation.

Narrative: 4

While flying the ILS CAT II approach to the Incheon International Airport Runway 15L, I did not capture the glideslope inside the FAF, triggering the aural warning system for "below glideslope" and "terrain too low." An escape maneuver was performed (not published missed approach procedure) culminating in a heading excursion. ATC subsequently assigned a heading and vectors to commence another approach which was flown as published without incident.

Synopsis

B747 flight crew report on descent below glideslope, CFTT incident during approach to RKSI.

ACN: 770104

Time / Day

Date : 200801
Local Time Of Day : 0001-0600

Place

Locale Reference.Airport : ATL.Airport
State Reference : GA
Altitude.MSL.Single Value : 2000

Environment

Flight Conditions : VMC
Weather Elements / Visibility.Visibility : 7
Light : Night
Ceiling.Single Value : 5000

Aircraft

Reference : X
ATC / Advisory.TRACON : A80.TRACON
Aircraft Operator : Air Carrier
Make Model Name : B757-200
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Nav In Use.Localizer/Glideslope/ILS : 26R
Flight Phase : Initial Approach
Route In Use : Visual Approach
Airspace.Class B : ATL.B

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Flying
Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Flight Engineer
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 8500
Experience.Flight Crew.Last 90 Days : 190
Experience.Flight Crew.Type : 200
ASRS Report Number.Accession Number : 770104

Person : 2

Reference : 2
Location Of Person.Facility : A80.TRACON

Reporter Organization : Government
Function.Air Traffic Control : Approach

Events

Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Automation : Aircraft Other Automation
Detector.Person : Air Traffic Control
Result.Flight Crew : Became Reoriented
Result.Air Traffic Control : Issued Advisory / Alert

Assessments

Contributing Factors / Situations : Human Factors
Primary Problem : Human Factors

Narrative: 1

DANGEROUS VISUAL APCH, ACFT WAS ROUGHLY 700 FT LOW XING THE FAF FOR RWY 26R AT ATL. GOT A LOW ALT WARNING FROM ATC. CLBED SLIGHTLY, INTERCEPTED GS, AND CONTINUED APCH, MEETING ALL STABILIZED APCH GATES TO A NORMAL LNDG. THAT'S WHAT HAPPENED, THE STORY IS HOW IT HAPPENED. FLT WAS A RED-EYE AND HAD BEEN NORMAL IN EVERY RESPECT UNTIL DSNDING INTO ATLANTA. MY EXPERIENCE HAS BEEN THAT ATL APCH TENDS TO 'SLAM-DUNK' (HIGH AND FAST STRUGGLING TO GET DOWN AND SLOW DOWN, EVEN IN THE FINAL APCH PHASE) THE EARLY ARRIVING RED-EYE FLTS. I REALLY HATE TO BE 'SLAM-DUNKED,' SO I WAS QUITE CONCERNED AND EXPECTING IT. CTR HAD US KEEP OUR SPD HIGH ON THE INITIAL DSCNT, WHICH WAS CONTINUED BY APCH CTL. APCH ALSO GAVE US A VECTOR TO 'CUT ACROSS' TO FINAL, RATHER THAN THE USUAL DOWNWIND. I REALLY FELT A SLAM-DUNK DEVELOPING, SO I USED MAX SPD BRAKES TO MAKE SURE I GOT AS LOW AS POSSIBLE AS FAST AS POSSIBLE, AND FLEW ABSOLUTELY NO FASTER THAN THE ASSIGNED SPDS. THEN, TURNING DOGLEG TO FINAL AT 3500 FT MSL MY FO REALIZED WE HAD NOT DONE THE 'APCH CHKLIST' (SHOULD HAVE BEEN DONE AT AROUND 10000 FT AFE). THIS MEANT I HAD NOT WARNED THE FLT ATTENDANTS THAT LNDG WAS IMMINENT, SO I IMMEDIATELY REACHED UP AND SIGNALLED THE FLT ATTENDANTS, WHILE TURNING TO FINAL AND SLOWING TO 160 KTS AS REQUESTED. WE QUICKLY DID THE CHKLIST, THEN I TOLD THE FO TO CALL THE FLT ATTENDANTS ON THE INTERPHONE AND TELL THEM THAT I HAD SCREWED UP AND TO SIT DOWN DOUBLE QUICK. I WOULD REALLY HATE TO HAVE A FLT ATTENDANT INJURED BECAUSE I FORGOT TO SIGNAL. AT THIS POINT I REALIZED THAT THE AUTOFLT SYS (AUTOPLT WAS ON) HAD CAPTURED 3500 FT AND WAS GOING ABOVE THE GS WITHOUT CAPTURING THE GS. I DIALED THE ALT DOWN TO 1700 FT (REALLY JUST SOMETHING LOWER TO ALLOW US TO DSND ON AUTOPLT TO THE GS). I JUST SPUN IT. I SELECTED FLT LEVEL CHANGE, CHKD THAT APCH MODE WAS ARMED, TOLD THE FO TO LOWER THE GEAR AND CALLED FOR FLAP EXTENSION TO 25 DEGS, WHILE DIALING BACK THE SPD TO FINAL APCH SPD. XING THE FAF, APCH (MAYBE IT WAS TWR, I'M NOT SURE) CALLED OUT A LOW ALT WARNING ALERT FOR US. SURE ENOUGH WE WERE AT ABOUT 1800-1900 FT, WELL BELOW THE GS. I CLICKED OFF THE AUTOPLT, CLBED SLIGHTLY, INTERCEPTED THE GS FROM BELOW, AND CONTINUED THE APCH. WE DID ACTUALLY COMPLETE ALL CHKLISTS AND MET ALL OF THE STABILIZED APCH GATES. LNDG WAS NORMAL. LATER, AT THE GATE, I SAT IN THE COCKPIT THINKING ABOUT WHAT HAD HAPPENED AND REVIEWED IT ALL IN MY 'MIND'S EYE.' I WAS HORRIFIED TO REALIZE THAT I HAD NEVER BEEN ABOVE THE GS (I CAN STILL SEE THE ADI

PICTURE VERY CLRLY IN MY HEAD). THE LEVELOFF AT 3500 FT WAS FINE AND WE WOULD HAVE VERY SOON CAPTURED THE GS NORMALLY FROM BELOW. INSTEAD, I INTERVENED DSDING IN FLT LEVEL CHANGE. THE SYS NEVER GOT TO THE GS, SO WE NEVER CAPTURED IT. I WAS EXPECTING A PROB, AND I SAW WHAT I EXPECTED. I THINK I WAS SO PREOCCUPIED WITH A POSSIBLE SLAM-DUNK THAT I LET EVERYTHING ELSE SLIDE (FORGOT TO DO THE APCH CHKLIST). DOING THE APCH CHK, AND ORDERING MY FO TO TALK TO THE FLT ATTENDANTS TOOK HIM OUT OF THE LOOP. WE WERE VERY RAPIDLY RUNNING A CHKLIST (SHORT ONE, LUCKILY), TURNING TO FINAL, SLOWING DOWN, CONFIGURING TO LAND, SWITCHING TO TWR FREQ, AND TRYING TO CAPTURE THE GS. MY XCHK OBVIOUSLY BROKE DOWN, AND I FORCED MY FO OUT OF THE LOOP, SO HE DIDN'T CATCH THE LOW ALT EITHER. THE AUTOFLT SYS DID EXACTLY WHAT I TOLD IT TO DO. THERE WAS NO MALFUNCTION OTHER THAN MY OWN. I SAW WHAT I EXPECTED TO SEE, RATHER THAN WHAT WAS REALLY TRUE. I ALSO LET MY CONCERN FOR THE FLT ATTENDANTS INTERVENE IN THE AVIATE, NAV, COM, HIERARCHY. BAD, REALLY BAD. WAS FATIGUE A FACTOR? WELL, IT WAS EARLY MORNING, BUT I DIDN'T FEEL BAD AT ALL. I HAD NAPPED WELL ON THE LAYOVER AND WAS WELL RESTED FOR THE FLT. SO IT WAS BACKSIDE OF THE CLOCK, AND A PERIOD OF CIRCADIAN LOW, BUT I CAN'T REALLY SAY THAT FATIGUE WAS ANY MORE THAN A MINOR FACTOR, IF THAT. MY FO WAS FAIRLY NEW, BUT HIS PERFORMANCE AND ATTITUDE HAD BEEN EXCELLENT FOR THE ENTIRE TRIP. HE IS A VERY GOOD PLT. HE KEPT UP WITH ALL I ASKED OF HIM THE

Synopsis

B757 FLT CREW DESCENDED BELOW GS ON A VISUAL APCH, TRIGGERING A LOW ALT WARNING FROM ATC.