NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

Attachment 2 - Flight Crew Interview Summaries and Statements

OPERATIONAL FACTORS

DCA11MA075

Contents

A. ACCIDENT

Operator: Omega Air Refueling
Location: Point Mugu NAS, California
Date: May 18, 2011
Airplane: Boeing 707

B. SUMMARY

On May 18, 2011, at about 1727 pm local time (0027 UTC), Omega Air flight 70, a Boeing 707 (N707AR), crashed on takeoff at the Point Mugu Naval Air Station, California The airplane impacted beyond the departure end of runway 21 and was destroyed by post-impact fire. All three flight crewmembers aboard escaped with minor injuries.

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D. Flight Crew Interviews

1.0 Interviewee: Ken McNamara, Omega Aerial Refueling B707 Flight Engineer (FE)

Date: May 25, 2011
Location: Via conference call
Time: 0900 EDT
Present were: David Lawrence - National Transportation Safety Board (NTSB); Mike Coker – Boeing; John Banitt – Omega Aerial Refueling; Tony James – Federal Aviation Administration (FAA); Elizabeth McGrath – NTSB

During the interview Mr. McNamara stated the following:

His name was Kenneth Kevin McNamara, and he was 50 years old. He became a flight engineer in 1983 on the C141Bs. In 1992 he flew the 707's and B747's at Andrews Air Force Base until his retirement in 2002. He signed up with Omega the day after his retirement, November 1, 2002, and had been with Omega ever since. He was the chief flight engineer, facilities security officer and assistant facilities security officer. He does not perform ground or flight training. He had ratings on the C141, B707 and 720, B747, and DC-10. He said he was dual qualified on the 707 and DC10.

He said his total time was around 9000 hours, and 6500 hours in the B707, and it was all engineer time. He had a private pilot license, single engine with instrument rating. His last DC10 flight was in March of 2010. He maintained proficiency for both aircraft with simulator training.

He was not drug screened after the accident. He did not recall if it was requested. He has had to take drug and alcohol screenings before. During his time in the Air Force, it was a regular occurrence. He had never been treated for drug or alcohol abuse. He had never been fired, terminated or asked to resign from employment.

On the day of the accident, he was supposed to give a tour to the fire department at 4 o'clock, but they didn't show. When he got to the airport, the Omega mechanics were still refueling the airplane. The stairs were on the sister plane N707MQ, and there was another crew there that he hung out with while waiting for his pilots to come out to begin preflight. When the pilots came over, he took the stairs over to their airplane. They did their preflight, and he said "everything was normal." He said the outside visual conditions were good. He said the interior was "just fine," and everything checked out as it should. They took their positions, did the final weight and balance, and got clearance to start. ATIS[1], which was old, was reporting winds "off the

[1] Automatic Terminal Information Service.

chart." They called tower who reported winds well under the ATIS and within limits so they proceeded with engine start. It was a normal engine start.

As they started to taxi, they heard a "thud" from the back. They all interpreted it as a normal brake lock, releasing from the night prior. He said to just stop the airplane and let him go back and look. So he got up out of the seat, walked through the cabin, looked out the windows, and scanned the engine instruments. Everything was normal. They said it had to have been a brake that they popped loose – a pretty common occurrence. They did several brake and steering checks on their taxi out. There was nothing abnormal.

They were cleared for takeoff. They did a final wind check and found winds were still well within limits. It was about a 17 knot crosswind from the right. Runway heading was 210. The winds were 250 or 260 at 17 knots. They did a final quick discussion saying they would add five knots to rotate because of the gusts. He had calculated rated power for that scenario. The first officer said "let's remember to apply smooth power so we don't get any stalls". Checklists were done. The airplane was configured for takeoff. They did a final configuration check. Captain said "let's go" and started adding power as normal. The captain said "engineer, fine tune it" so he did the final push ups and adjustments to power. Everything was set prior to 80 knots, which was normal. Everything is looking great chugging down the runway; nothing abnormal is going on. They hit V1 "141 knots". They hit Vr[2], which was "147 plus 5 equals 152 knots." The Captain rotated the airplane smoothly and normally.

A second after rotation, the number two engine throttle slammed back against the quadrant and startled all of them. He thought perhaps they had a reverser or something that had opened. There were no lights, no aural warnings, no tones, and no indications other than the throttle coming back. As he scanned the instruments, he did not see any real positive indication of anything on that engine. As he started to get ready to look at other things, the Captain reached over to the other three throttles, pulled them back, and said "we're landing". He thought the Captain had determined at that point that the airplane was unsafe to fly. They were not high in the air – maybe twenty feet or so. He did not have an opportunity to check airspeed or anything else.

After the decision was made to get it back on the ground by the Captain, he said he was getting ready to land the airplane. The airplane was yawing heavily and rolling to the left. He did not know what the position of the rudder was, but he knew the Captain was trying to correct it. They put it down skewed to the runway, pointed to the left. They were well left of the runway environment. They had the gear down. They landed on the pavement, but there was only marsh and berms in front of them. He said they just rode it out. They hit hard three times. He said "t was surreal, calm, and very quiet" for him. He did not recall hearing any of the "racket" going on behind him. It was a very violent jarring. He said "oh God" a couple of times. He was tossed forward in his belt to the point that it was catching and locking. They came to a complete stop, sat there for a second, and looked at each other dumbfounded in shock and disbelief.

The Captain asked if everyone was okay. They all replied in the affirmative. The first officer asked if they should run a ground evacuation checklist. The Captain said "just get out of here".

[2] Vr=Rotation speed. Source: 14 CFR1.1.

They "flew out" of their seats. The flight deck door was jarred closed. He "really had to lay into it" and bang on it with his shoulder. He was the first through the door and he looked to the back of the plane. It was a mess. The floor was buckled. The roof was down. Parts were everywhere. He could not even see the first row of seats. Just immediately after the galley everything was destroyed. The floor and ceiling were collapsed in together. He later stated that he did not see any fire on the inside of the cabin. The Captain said, "go ahead and open the door. Let's get out of here." He cracked the door and immediately saw the whole left wing/engine area "on fire big time". The fire was spreading and getting bigger. He pushed the door open all the way and deployed the slide normally. He went down the slide. The Captain and the First Officer were running, but he found it easier to crawl so he crawled through it. They reached the first berm off the nose of the airplane.

He said someone asked, "Is everybody okay?" He said, "my knee hurts." They looked back at the plane. The left wing was really starting to burn intensely. The smoke was thick.

The security personnel reached them first. He thought they were shocked that they were walking out of the airplane. They did their first responder assessments. They all made their way back towards the runway overrun area. The fire department was coming down the runway. He told ARFF to call tower or ground to let them know they had made it out. They hung out at the overrun area until the ambulances showed up to take them to the hospital.

The Captain and the FO[3] were walking and fine, but his knee was swelled up so they had to do some assessment on him. They put him on a gurney. They took some x-rays of his knee and took his vitals. They said he looked really good; there was just a lot of trauma to the back of his leg and knee. They put him on Motrin to keep the inflammation down.

The first guys he met at the hospital were the Omega Air mechanics. All of the other crew was there. He said everyone who was at Point Mugu from Omega had come to the hospital.

He said the Captain was the flying pilot. He said there were two deferred maintenance items on his panel: the auto pressurization was deferred to manual mode and the right Freon pack was DMIed[4] where the main programmer had to be bypassed to get the Freon to engage. They had not flown the airplane the previous night, but they did fly it the previous day. He had written up the air refueling monitor either on that flight or on the day prior. They had to send the monitor off but he had a spare monitor.

He stated that the mechanics would do a preflight, the engineer would do a walkaround, and the First Officer would do a walkaround. For his preflight, he turned on the hydraulics, did fluid checks, did electrical checks, and did an interior and exterior walk around. He did not notice anything out of the ordinary on the exterior walk around for this particular flight. He said it "looked just like it always did". When asked about the engine pylons, he said he checked them visually looking for any blowout panels missing or not looking right. He checked that the wrap around panels were secure. He checked for general condition. When asked if in his past history

[3] First Officer.
[4] Deferred Maintenance Item.

he had noticed anything in the pylon areas of any of the engines on the B707, he said that occasionally he would see a blow out panel that was not right.

When asked about the test for the cockpit voice recorder, he said he pushed the green button himself and checked that the needle jumped up into the green zone on the gauge. He scratched the microphone and made sure he saw some jumping to ensure it was working. He said there was a plug in feature on the CVR[5], but they typically do not plug in. He went on to say that if he did plug in, he would be listening for four tones. He noted that their preflight was not as extensive as the preflight he did in the Air Force. He mentioned that he has plugged in before, but he does not do it every day, and he did not do it for this flight.

When asked about weather conditions at the time of departure, he said it was pretty clear and the sun was up. There were some low clouds over the hills which was pretty normal, but there were no clouds in their general direction. There was a stiff breeze. He remembered the ATIS winds somewhere 70 degrees off and at thirty-some knots. He had looked at the chart several times, and the winds were off the chart. They were not going to take off in those winds. When asked about crosswind control technique used for takeoff, he said he was not the one to comment on it. He said he knew from basic pilotage to put the rudder in and use the ailerons to keep the wings level.

Takeoff configuration was flaps 14, 5.25-5.5 on the stab, speed brakes down, and leading edge extended. When asked if ground spoilers were deployed after the Captain put the airplane back on the ground, he said they were and he remembered the Captain reaching for them, but he did not recall the reversers being deployed.

He stated that he had operated out of the same airport every day except one for the seven days prior to the accident, and he had been there several times a year for many years. He was very familiar with the airport. He could not think of any special training that was required for operations out of the airport. There were no noise abatement procedures for the takeoff. They were headed off over the water. The fuel load was 158,000 lbs and "topped off." The weight and balance was done with an electronic form. They were well within CG[6] limits.

He had never experienced anything like this event before. He had heard of scenarios and practiced scenarios in the simulator with multiple malfunctions on one side of the airplane. He had trained on single engine failure and occasionally dual engine failure on takeoff. He said that he had seen a two engine takeoff heavy weight in the simulator with both engines on the same side, but he could not recall if he had seen anything similar in his most recent simulator session. He said that simulation was to replicate the Anchorage, Alaska Air Force B707 accident back in the mid 1980s.

For Omega, they trained at the Pan Am facility in Miami (for the B707). For the DC-10, they went to Pan Am in Memphis, Tennessee. The B707 simulator in Miami was full motion, but it was not good for currency. He had been going there since 1992 and used to run the simulator as an Air Force instructor. He said that if they have other things to do, they could get currency on

[5] Cockpit Voice Recorder.
[6] Center of Gravity.

the airplane. Omega Air maintained their airplanes, but it was subcontracted to Stambaugh Aviation in Georgia. He remembered the plane came out of maintenance (a B check, he thought) several weeks prior to the accident.

When asked if he had ever had any issues with the maintenance on these aircraft, he said there were times when things would get written up, get fixed, and then come back again.

He said the aircraft were flown mostly under public use, but there were a few times they had to move the airplane not under contract. In those cases, they had to make a log book entry to state that the aircraft was removed from one category and placed into another, and they had talked about that with the Director of Quality and FAA rep. He believed the Captain was in charge of making that entry. For this particular flight, they were under public use. As the flight engineer, he saw the logbook to fill out the times so he would see the entry taking the aircraft in or out of public use. He said on this occasion there was a normal maintenance sign-off. He said they would know if the aircraft was supposed to be in or out of public use based on their mission alone and Ops reminding them through phone or email.

On the day of the accident they were scheduled for a 1715 engine start and 1730 takeoff. They were to head out over into the warning area for four and half hours and then recover back at Point Mugu at 2200-2230. For a 1715 start, he would usually show an hour or so prior, leaving the hotel at least a half an hour before that. During the day, he was doing some homework. He got up that morning around 0800 and had breakfast around 0820. He normally gets up at 0530 (local back home). The day before the accident he had an afternoon flight (1300-1600). He was usually in bed by 2200. The day before that he was off. He had no sleep problems or issues. He has never had any problems getting to sleep or resting. Sometimes he had “alarm phobia”, but that was not the case here because he had all afternoon and evening flights.

He described his overall health as very good. He did not take any prescription or non-prescription medication. There were no changes to his health in the past year. His eyes got a little worse, but that was about it. Financially, there was some fluctuation over the past year, but no drastic changes. When asked about his personal life over the past year, he described it as “real good”.

He confirmed that when they evacuated the airplane, the slide deployed “as advertised”. When asked about the start sequence, he said he heard nothing abnormal on the start. The popping sound he heard at the start of taxi was certainly not a stall from the engine (he had heard those before); it had to be a brake. When he got up to look out the window, he was doing a general scan to make sure everything was normal and attached. Everything was good.

When asked to describe the safety culture at Omega, he said that “certainly if something was not right, they would do everything to make it right”. If they were not sure of something, they would call the crew and ask for clarification. They certainly did not want any ill will on any of them. When asked if they were responsive to concerns, he said “yes”, but there are times where there are differences in view. But if there is something they don’t feel is right, they won’t take it. Their Captains would stand up to that. It doesn’t happen often, but there are conflicts.

When asked if they ever carried passengers, he said they did not carry passengers for hire. They would carry people if required by the mission, typically their mechanics. There were eight seats in the front, ten single seats over the wing area, and eight more in the back.

He said that the event occurred just a split second after Vr, and that his initial impression was that the engine probably was not there. If there was anything that he could not recall, it was because everything had happened so fast.

Interview concluded at 1008 EDT.

2.0 Interviewee: Joseph Robert Becker, Omega Aerial Refueling B707 First Officer (FO)

Date: May 25, 2011
Location: Via conference call
Time: EDT 1020
Present were: David Lawrence – NTSB; Mike Coker – Boeing; John Banitt – Omega Aerial Refueling; Tony James – FAA; Elizabeth McGrath – NTSB

During the interview Mr. Becker stated the following:

He stated that his name was Joseph Robert Becker and that he was 45 years old. He started his flight training in the Navy in 1995. He went to Enid in December of 1996 where he flew the T1. He got to Oklahoma City in the beginning of 1997 and flew the E6 there from October of 1998 until 2001. He then went to Rota where he spent three years flying the C12 Super King Air around Europe. He was a Navy instructor pilot in the E6 and the NATOPS[7] instructor for the C12 in Rota. Coming back to the States, he was stationed on the Stennis for a non-flying tour. He ended his flying in Oklahoma City from April of 2007 to April 2009. He did his first flight with Omega Air Refueling in October of 2008. He was on terminal leave through February and March of 2009, and he retired from the United States Navy in April 2009. He is dual qualified for the DC10 and the B707 at Omega with close to 300 hours in the DC10.

He stated he had flown with both the captain and the flight engineer on numerous occasions. He classified the captain's flying ability as outstanding, stating that if he had to fly with anybody, it would be Capt Thurmond. He went on to say that Captain Thurmond was "as good, or better of a pilot than I am". He said Ken McNamara, the flight engineer, was very professional, well grounded, and reasonable and that Omega was very lucky to have the quality of people that they have.

He had about 4000 hours of total flight time with about 2800-3000 of that in the B707. He was captain qualified with his B707 time split about equally between the left seat and the right. He said the majority of the guys at Omega were captain qualified, and so they would take turns flying the right seat.

After the accident, he was not given a drug or alcohol screening. He believes Ryan Murphy talked to Capt Thurmond about doing the screenings. He said that he was willing to do one; they

[7] Naval Air Training and Operating Procedures Standardization

all discussed it, but he could not recall the specific reason why they decided not to have the screening done. He stated that he has never failed a drug or alcohol screening and has never been treated for drug or alcohol abuse. He has never been fired, terminated or asked to resign from any employment.

On May 18, he and Capt Thurmond rode out to the airplane together. Mr. McNamara was there early because he was giving a tour to the firemen. The two of them got out of the car and recognized that it was pretty windy. After putting their stuff down, they did a walk around of the airplane. Mr. Becker listened to ATIS and did a right seat preflight. He then joined the mechanics in the back to wait out the winds. They were calling tower and listening to ATIS until crosswinds got well within limits. When they got the call that winds were in limits, they ran the normal checklists. Engine starts were normal, "no problems", and they got clearance to taxi. He said there was a pretty standard power setting used to get the airplane moving. He stated that it seemed odd because Capt Thurmond pushed the power up and then pushed it up a little further. Mr. Becker watched the engine instruments because he wanted to make sure they were not going to push it up too high. He was concerned that might cause damage to something behind them. All of a sudden there was a popping sound and the plane moved forward. Capt Thurmond immediately stopped the plane and went to idle. They said something to the effect of "what was that?" Mr. McNamara got up and walked to the back to check it out and returned saying everything looked good. They discussed the probability of what had just happed. Someone asked if it could have been a compressor stall. He said he was absolutely sure it was not a compressor stall; he had been looking at the engine instruments the whole time. Capt Thurmond said he felt something in the rudder pedal, and it was probably a brake on the right side that was frozen and released. After a discussion about that, they decided to move forward. He said the taxi was uneventful. Pulling up to the hold short line, they got clearance to take off. They were looking at the wind sock the whole time they were taxiing up. While neither variation nor gust were called for, they saw variation and a little bit gust looking at the windsock so they decided to add five knots to their rotate speed to compensate for the gusting.

He said he mentioned something to the others about pushing up the power relatively smoothly to avoid a compressor stall with the crosswind. They took the runway, and Capt Thurmond stood up the power. He stated it was a standard takeoff. He said he was looking at the engine instruments because it was considered a max takeoff due to the crosswinds and the weight. In addition to the engine instruments, he was also looking at the airspeed and the outside, and said that was his standard scan for takeoff. He noted he was probably looking at the engine instruments a little more than normal just because he knew they were doing a little higher takeoff than normal, and he wanted to make sure they weren't exceeding any limits. At 80 knots he called "80 knots" and that the power was set. Capt Thurmond then took over the yoke. As they were going down the runway, he was looking at the airspeed indicator, and he could see 2-3 knot gusts, confirming in his mind that the gust factor correction was probably a good idea. When he called V1, Capt Thurmond put both of his hands on the yoke in preparation for rotate. He called rotate around 152 knots. He said the rotation was smooth. Mr. Becker was riding on the rudder pedals so he could feel Capt Thurmond putting in corrections. Capt Thurmond kept the wings level and set a good takeoff attitude.

Mr. Becker stated that he pretty much always does the same thing after rotate: he looks at the engine instruments, he looks at the airspeed, and he looks at the VSI. He said that as soon as the VSI indicates a positive rate, he looks out the right side to visually confirm positive rate. He then stated that he never looked out the right side. He went on to say that he did not know how far off the deck they got, but he was assuming it was not more than 10-20 feet because if they were any higher, he would have already looked out and put his left hand on the gear in preparation for a "gear up" call. He said it had to have been at 15-20 feet that he heard a loud metal on metal sound, like taking a sledgehammer to a railroad. He looked down to see the number two throttle had come all the way back, and Mr. McNamara had his palm on it like he was trying to push it up. He and Mr. McNamara looked at each other realizing this could be a problem. He later stated that there was no aural or visual cue other than the throttle slamming back to alert them to the situation. There were no lights and no sounds other than the throttle coming back. He looked outside and then looked at Capt Thurmond. Capt Thurmond said something to the effect of "we're landing" or "we're not going to make it", he thinks probably referring to the rock wall at the departure end of the runway. They had yawed a little bit to the left and he felt Capt Thurmond put in full right rudder. He could not recall where exactly the control yoke was at that point. He stated that he normally keeps his hand near the yoke, ready to assist if there is any assistance needed. But as soon as he heard the sound and looked down to the throttles, all of the normal stuff went out. He reiterated that he did not remember the position of the yoke, but went on to say that when they did end up touching down, they were as close to wings level as they could get. He never thought they were going to drag a wing. Whatever Capt Thurmond did to do to keep the wings as level as possible, he did it. It did not seem like they were out of control or like they were going to "tank it". Mr. Becker said Capt Thurmond made the decision to put the aircraft back on the deck, and added that it was the right decision. Capt Thurmond put the remaining throttles to idle and pulled the speed brakes.

Mr. Becker stated that he was not sure when the number one engine departed. They knew the number two had failed. There wasn't any indication on engine instruments; it was just gone. So Capt Thurmond got the airplane back on the deck. Mr. Becker said he assumed that was when it failed because they were immediately pointing 20-25 degrees left of the runway, and Capt Thurmond was just trying to keep the airplane from dragging away or rolling over. Somebody said "here we go" or "going off roading" or something. They went across the grass and hit the alpha taxiway. As they left the alpha taxiway, they went a little bit airborne. He stated that he was looking outside pretty much the whole time, at that point thinking they were not going to survive. He could see the nose coming down, and Capt Thurmond must have pulled back on the stick, keeping the nose from planting in the pond. He said the tail must have hit and maybe that is when it broke. When they hit the water the gear probably ripped off. They stopped and the airplane settled in the mud. He thinks he asked aloud if they should do a ground evacuation checklist. Capt Thurmond said something like "no, let's get out of here".

He let Capt Thurmond go first climbing out of the seats. He could see Mr. McNamara was pushing on the door to the main cabin, and it was not going anywhere. Mr. McNamara somehow got the door open and filed out. Capt Thurmond followed and he followed Capt Thurmond. By the time he got through the door to the main cabin Mr. McNamara was already jumping out of the airplane. He heard fire and the hissing of the escape slide. He paused very briefly and looked toward the tale of the airplane. The spare parts and tires and stuff from the back appeared

to have come loose and taken out the partitions. He said the interior was all black, sprayed with muck and water. The back part of the airplane was totally destroyed. It seemed as if Capt Thurmond hesitated slightly, kind of wallowing out of the airplane. It seemed like he kind of hit the slide as it was inflating. When it was his turn to jump out, the slide was half inflated and ended in three feet of pond muck/scum. He was running forward. When he got to the solid, second little berm, he turned around to see Capt Thurmond and Mr. McNamara were behind him. Capt Thurmond was like "go, go" and waved him to keep going. By the time they all got to that land, Mr. McNamara was lying down because of his leg. He asked Mr. McNamara if he wanted him to carry him; he felt they were still in danger, that if the plane went up they would be covered in flaming fuel. Mr. McNamara replied in the negative and said he was alright. Mr. McNamara got up and they kept walking quickly over to the overrun area. When they reached the asphalt, they saw the trucks coming down the runway. They made a comment along the lines of "it's nice to see they're showing up". Mr. Becker noted that it was a quick response. They weren't there for more than a minute or two when a police officer showed up asking if they were okay and letting them use his phone to call home.

After that, they sat around watching the aircraft, the guys making sure they were okay. Mr. McNamara was lying down; he obviously had some problems with his leg. Mr. Becker said that he was numb and that Capt Thurmond probably felt the same way. They were taken to the hospital where he was checked out. When asked about who met him at the hospital, Mr. Becker stated that the first guy to walk in was John Banitt. Capt Thurmond was getting looked over by the doctor. He was out in the hall. Mr. McNamara had been taken into another room because he was a bit more seriously injured, having been brought in on a stretcher. John asked them how they were doing and said he was glad to see they were alive. He said other people started piling in. Some more guys came from Omega, guys coming in to relieve and guys from the other crew.

During the flight, Capt Thurmond was pilot flying and Mr. Becker was pilot monitoring. When asked if he recalled any deferred maintenance items in the logbook, he stated that he did not. When asked if he saw the logbook, he stated that he did. He said that usually both of them do a walk around on the preflight. On this particular flight, he did do a walk around. He confirmed that during his walk around he does look at the engine pylon areas for general condition. He then noted that if he were to see something that made him scratch the back of his head, the first thing he would do would be to call the flight engineer down. He said if he were to notice anything strange or odd or out of place or anything different from the last thousand times they had done a preflight, then he would refer to the expert. He then stated that there was nothing remarkable about this particular walk around. In his history of flying the 707, he has never seen anything unusual or questionable around the engine pylon area, but noted that as a pilot he could not make any other than a general view of it.

When asked if he had ever trained on or seen a reverser unlocked in flight, he stated that he had trained on that a lot while in the Navy. When asked about what would happen with the thrust lever in that situation, he stated that the thrust lever would not come back but the thrust reverser unlock light would come on the front panel. He did not recall any aural tone being associated with the unlock light.

When asked if he could recall the ATIS, he stated that he could not, but he wrote it down. He remembered Tower calling winds at 250 at 24 knots. He was unsure on the numbers but certain there was a crosswind. When asked about crosswind takeoff technique, he stated that as the right seat guy, he puts forward pressure on the yoke and turns it to the right. This brings the right wing down to compensate for the crosswind. It was standard procedure, and it was another consideration for not using reduced thrust takeoff. They knew that with a crosswind they did not know how it would negatively impact their performance considering what they weighed and where they were going and the available thrust. When asked about the flaps setting for takeoff, he stated that it was 14. When asked if the captain had extended the thrust reversers after touching down, Mr. Becker stated that he was pretty sure he had, but he was not certain. He then confirmed that no checklist was done afterwards.

Mr. Becker said the fuel load was 158,000 lbs. He stated that he had never before experienced an engine failure in line operation, but he had trained for it every quarter in the Navy. He had also trained for a dual engine failure on both sides on takeoff, but it was in a 707 with CFM56 engines. For Omega Air, he trained in Miami at Pan Am International Flight Academy in a full motion visual flight simulator. He could not identify the class of the simulator. When asked if he had ever trained there on a V1 cut with two engines on one side, he stated that he had. He stated that the last time he saw that V1 cut was at the Pan Am facility in January of 2010 when he had his 61.58 PIC[8] check. He had not been back since then on the B707 simulator, but he had on the DC10 in June of 2010, and that is what carried him over as having his annual check. He went on to say that he only had to have a check every two years in model, so he would alternate each year between the B707 and the DC10. Being dual qualified and using this alternating schedule, he might not see a simulator for the B707 for two years. When asked about the V1 cut with two engines on one side, he noted that the 707 simulator in Miami was very limited, very "punchy and difficult." He stated that the maneuver was not an easy one. He also stated that while the actions of the pilot were the same, the reaction of the simulator was different. The simulator experience and what happened on May 18th were not really in the same ball park. The simulator created an acceptable simulation, but considering the differences in engines, crosswinds, and weight, it did not really simulate the event that happened on May 18th. Mr. Becker went on to say that on May 18th they were not victim to the programming of the simulator; they were riding the facts and dynamics of an engine departing the airplane. The simulator prepares them to react in a certain way, but after the aircraft got back on the deck, they were doing the best they could to keep it steady and level.

Mr. Becker stated that on the morning of May 18th he woke up around 8:00 or 9:00am. He ate breakfast, worked out, may have done laundry, watched the news, and called home. He has no issues with fatigue. He slept well. He did not set an alarm and sometimes turned off his phone when he went to bed. He was not the type to stay up late. He was in bed by 9:30 or 10:00pm the previous night. He classified his overall health as outstanding. He did not take any prescription or non prescription drugs. He had no changes in the state of his health in the past year. He had a shoulder problem a year ago, but the shoulder had been better for 8 months, and he was experiencing no problems with his shoulder now. He had no changes financially in the past year. And he had no changes in his personal life in the past year.

[8] 14 CFR Part 61.58: Pilot in Command (PIC) proficiency check: Operation of aircraft requiring more than one crewmember.

Regarding the safety culture at Omega Air Refueling, Mr. Becker said they were concerned about safety. They were very responsive to input from pilots if they had an issue that would cause an aircraft to not be able to make a mission. No pilot that he knows there would go flying in an aircraft that is not supposed to go flying. He said if it was a downed aircraft, "it was down", and they were not going to go flying.

Interview concluded at 1135 EDT.

3.0 Interviewee: Chris Thurmond, Omega Aerial Refueling B707 Captain

Date: May 25, 2011
Location: Via conference call
Time: 1400 EDT
Present were: David Lawrence - NTSB; Mike Coker – Boeing; John Banitt – Omega Aerial Refueling; Tony James – FAA; Elizabeth McGrath – NTSB
Represented by: James Ramsey, Cooling Law

During the interview Captain Thurmond stated the following:

His name was Christopher John Thurmond, and he was 41 years old. He was a Navy pilot, having flown in Pensacola, Florida and Corpus Christie, Texas on the B707 and E6A. He also flew King Airs in Europe where he was the head NATOPS instructor on the King Air 200's and was a B707 assistant NATOPS instructor. He was a T45 instructor in Kingsville, Texas, and worked for United Airlines as an A320 first officer based in Chicago. He learned he was going to be furloughed from United in the spring or summer of 2008. He approached a friend at Omega who helped him get hired there. His date of hire with Omega was September of 2008 where he became a Captain on the B707 shortly after being hired, and he also flew a "handful" of B707 trips with Principle Air but had not flown for them since October. His last trip with United was just before Christmas of 2008, and he was officially furloughed on January 14, 2009. He flew both internationally and domestically with Omega. He was not dual qualified at Omega on the DC10.

He was an ATP[9] rated pilot with a CFI, CFII and MEI certificates.[10] He had type ratings in the A320, B707 and 720, and BE200. His total time was about 5300, with around 2000 hours in the B707. He said about 1200 hours of that time in the B707 was as PIC.

He had flown with the first officer and flight engineer "many times", and said he considered both of their flying skills as "very strong".

He said he was not given a drug or alcohol screening after the accident. He said he had never failed a drug or alcohol screening before, had never been treated for drug or alcohol abuse, and had never been fired, terminated or asked to resign from a previous employment.

[9] Airline Transport Pilot certificate.
[10] CFI: Certified Flight Instructor. CFII: Certified Flight Instructor – Instrument. MEI: Multi-engine Instructor.

Regarding the accident, he said he was the scheduled captain for N707AR, Omega flight 70, with a scheduled takeoff time of 1730, with a 2230 recovery back at Pt. Mugu. He said the FE had his own rental car to leave for home in Ontario, CA the following day, and he was leaving home from LAX the following day, and the FE left early to meet the ARFF[11] a standard training tour to the airplane. Before he left the hotel, he printed out weather and NOTAMS[12] from flightplan.com, and filed his flight plan via phone for a stereo standard route through an agreement between Omega and the Navy for the leg out to the warning area and the leg back from the warning area. He got the NOTAMs through the Defense NOTAMs service. He had been tracking the high winds via his phone, and gave their operations a heads up that they may not go due to the high winds. They met the mechanics at the airplane, and it was properly handed off to them with the fuel upload. He said the FEs do a very thorough walkaround, and at least one of the pilots will do another walkaround.

He said they alternate flying, and it was his turn to fly as captain. He said he copied the ATIS, and it was "pretty old", and copied his clearance. He had everyone sitting in "crew rest", and talked with the other crew regarding the winds. He called Pt. Mugu, and they reported a steady wind out of the southwest at 22 knots.

He said they started up with no issues. He said out of the chocks, it felt like one of the right brakes was stuck, and felt it "pop" when it released. He said the FE got up to look around, and the mechanics gave him a thumbs up, and they taxied out, checking the brakes again to make sure they were free. He said they felt fine. They taxied out on Bravo to runway 21 per their clearance. He said they were still reporting a steady wind of about 22 or 24 knots, not the crosswind component.

He said they could feel the wind on taxi out, and the wind sock appeared varying, not steady. They briefed a max power takeoff. They then reported winds out of 240, and he reiterated to apply 5 knots to the rotate speed because the winds were gusty and variable. The FO mentioned that they needed to be smooth on power up winds the gusty winds. They set about 65-68% on power up, and said maybe one of the engines was "lagging", but all indications looked good on takeoff. He said the FO had the control wheel on the takeoff roll. The FO called airspeed alive, 80 knots, and he said "I have the tops". At V1[13], he put both hands on the yoke, and the airplane was accelerating "fine". The FO called rotate, and he made a normal rotation to 11 degrees pitch up. Before a positive rate indication, he saw outside that they were off the ground.

At about 25-30 feet, there was a "pretty good bang and thump" on the left side of the airplane, and he input aileron and right rudder. The number two thrust lever "slammed" shut with a "metal on metal" sound, and would not move. The left wing dipped, yaw to the left, and he put in full right rudder and "almost all" of his aileron in. He told the crew that they were not going to make it over the rocks, and he checked for the gear down. He said he could not keep the left

[11] Aircraft Rescue and Fire Fighting.
[12] Notices to Airmen.
[13] *V* 1 means the maximum speed in the takeoff at which the pilot must take the first action (e.g., apply brakes, reduce thrust, deploy speed brakes) to stop the airplane within the accelerate-stop distance. V_1 also means the minimum speed in the takeoff, following a failure of the critical engine at V_{EF}, at which the pilot can continue the takeoff and achieve the required height above the takeoff surface within the takeoff distance. Source: 14CFR 1.2.

wing up. He lowered the nose to gain airspeed and enough authority to keep the left wing up. He announced he was going to land on the ground and applied speed brakes up and full braking with the FO's help on touchdown. He got on the tiller, and tracked to the left of the runway. He estimated they were traveling about 150 knots, and he wanted to stop the aircraft. When they went past the final taxiway, there was uneven terrain, and knew it was going to be violent. The transition from the taxiway to the grass embankment into the swamp, he noticed that his nose was low and believed he was going to nose in to the "black swamp". He pulled the nose up, and felt the tail in the mud, and then felt a violent deceleration. He couldn't remember if he stowed the speedbrakes, or if he fully closed the condition levers. He said he tried to move the condition levers but they wouldn't move.

He told the crew to get out. He and the FO gathered at the door behind the FE, and couldn't the door open. They thought about going out the cockpit windows. The FE pushed the door open through the mud, and the slide pushed on the mud when it deployed. He could see a massive fireball when the door was opened 4-5 feet aft of the cabin door, and they jumped as far forward as they could. The mud was up to their waist, and they all dog-paddled through it. They got to the shore, and kept moving to the runway overrun where they met with a regional police officer. The Seaside trauma center then showed up and transported them. They initially took them to the Ventura trauma center. The showered and were attended to there, and given prescriptions. His blood pressure was high, and he was given Adivan and Motrin. John Banitt then drove the three of them back to the hotel, and they awaited the FAA to arrive and give statements. He went to the pharmacy to fill out his prescription, and then returned to meet the FAA and give a statement. He went via the Super Shuttle to LAX and flew to Kansas City to attend a family wedding.

He said there were "some" maintenance items in the log book, one being the auto pressurization controller, requiring manual control of the pressurization by the FE. There were no write ups on the engines. He knew of no maintenance issues with the aircraft on the inbound flight.

He said the all crew members have preflight duties, and the FE walks around the airplane, as does the captain, but he sometimes asks the FO. He did the preflight on this aircraft, but didn't notice anything unusual. He said he looks for 2 stripes on the engine pylons to verify that the lines were lined up, as well as blow-up panels missing, and the engine intake. On the inboard engines, he looks for the engine fire bottle pressures. The last general thing he looks for is leaks or puddles on the ground. Regarding the two stripes, he recalled seeing them on his walk around he looked at them around, and was trained on them when he came to Omega since they didn't have those on the B707's he flew in the Navy. They are about an inch wide paint. When he was trained, he was not taught what a misalignment of those stripes would mean.

He said the aural and visual indication he got at the failure was the slamming back of the #2 throttle lever, and there was no other visual or aural indication. If he had a reverser unlocked in flight, they would receive an amber unlock indication light over each engine. He had never received one before, but had been trained on them in the Navy but it had not been part of any check ride since leaving the Navy.

He said the weather was few clouds with a stiff southwest winds. He only recalled that the ATIS was about two hours old, and the winds were gusting above 30 knots, and the ceiling and

visibility was good. He decided to call the tower to get a reading on the weather, and believed they were told the winds were about 22 knots, and 24 knots steady as they took the runway.

He said their particular crosswind technique was to have the copilot feed the ailerons into the wind during the initial roll careful not to put too much in for drag. At 80 knots he would take control of the yoke. He said the airplane was at flaps 14 with the trim in about 5 to 5.5 nose up trim, anti-skid on and gear down. The fuel load was about 158,000 pounds, and there was no center of gravity issues, and the airplane rotated "fine".

He received his training on the B707 in the Navy, but his recurrent training is at Pan Am International training academy in Miami. He said it was not a level B simulator, and you cannot log landings in it. His last training was in January, 2011. He said he conducted a single engine V1 cut, but not a two engine V1 cut. He did one in the Navy back after the E3 AWACS[14] incident in Alaska, before 2009. They did quarterly training in the Navy, and had the manpower to do "extra things", and practiced the scenario in the simulator.

He said there were no checklists run after the airplane stopped, and they could hear the explosion. He said he was probably still in shock when the stopped, and they didn't have time to run any checklists.

He said scheduled maintenance is performed in Brunswick, GA and San Antonio, Texas.

On the day of the accident, he rose about 7am and called his wife, then had breakfast. He then went on his computer in his hotel room to catch up on paperwork and emails. He checked out of the hotel at 1430 and went to a nearby restaurant for lunch. He picked up the FO at about 1600 and drove to the airbase. They stopped at the mini mart to pick up some items, and then met the FE at the airplane. The day before the accident, he really didn't remember his activities, but one of those days he had a day mission and the other a night mission, but they got plenty of sleep and rest only flying 4 hour missions. He never had to set his alarm for those days. He wasn't tired any of those days. He never had any issues with fatigue he felt uncomfortable with. He said his overall health was excellent with and never had any issues on his medicals. He did not normally take any prescription drugs. He did not have any changes in his health over the past year, nor any financial or personal issues.

He said the previous training event prior to the January 2011 training was about 10 months earlier, and he went a month or two early. He said the training at Pan Am "meets standards", and was not up to the standards he had in the Navy or at United. Pan Am uses their instructors, and they use Pan Am normal and non-normal procedures and Omega checklists.

He said when he firmly put the airplane down on the ground, if they got airborne again, it was slightly before they hit something.

[14] Airborne Warning and Control System.

Said their intended mission was for a Navy refueling mission. He said that Omega had been under Navy contract since he came there. He said they had refueled Harriers under that contract, and flown numerous missions to Australia to refuel RAAF[15] F-18's.

He said he was not sure if Omega did any civilian flying, but then said there was some civilian flying that involved signing in and out of the logbook, but declined to elaborate and said we would have to "check with the company about that." He said he would know if based upon a stamp in the logbook by the DAR.[16]

He clarified that the slide on the forward entry door did not deploy fully because of the thick mud in front of the door. He said the mud was deep when the door opened, and when he saw the fire, it was growing forward. He did not see fire on the inside of the cabin, but saw a lot of damage and "a ton of mud". He recalled trying to pull up the thrust reversers up on the initial landing.

When he was asked about the safety culture at Omega, he said he felt like it "meets the requirements", but it was difficult to answer because he had the greatest safety culture in the military, and an excellent safety culture at United Airlines, with their CRM[17] training, and it was not fair to compare with what Omega had and what he had in his previous life.

Interview concluded at 1513 EDT.

[15] Royal Australian Air Force.
[16] Designated Airworthiness Representative: A DAR is an individual appointed in accordance with 14 CFR § 183.33 who may perform examination, inspection, and testing services necessary to the issuance of certificates. There are two types of DARs, manufacturing and maintenance.
[17] Crew Resource Management.

E. Flight Crew Statements

4.0 Captain

Chris Thurmond / CAP / wife's cell [redacted]

I was the CAP/PF on N787AR today 18 May 11. We conducted a thorough preflight to include fueling to Max/460K. We awaited the winds to die down to below limits which they did @ tower reported 170SL/PT) 22KWD component. Checklists & Briefs went normal. Once cleared for takeoff we noted the 5kt gust observed which we added to V_R. On line up, FO, ~~CAM~~ suggested we apply T/O pwr smoothly as possible which we did. Takeoff run was made at max rated power and acceleration and airspeed check were good. Shortly after rotating at approx 20' AGL, V_2+, 15°, the #2 throttle slammed aft loudly against the throttle quadrant. Keep gear down as we stopped climbing and adjusted pitch slightly down to hold V_2. A/C began descend w/ Eng 1 throttle stuck & B&4 Full Rev Set. Left wing dipped slightly at 20' AGL, lowered pitch slightly and leveled wings just as we impacted swamp. Landing Gear seamed intact until we bounded twice in the marsh. Final impact was violent. ~~the~~ FE forced open the door blocked by mud. We opened the Fwd Cabin door and saw a large fire ball infront of the Left wing. We escaped through the swamp mud and made it to a safe distance. Left knee sore. went to ER for Eval.

5.0 First Officer

JOSEPH BECKER 18 MAY 2011 FIRST OFFICER

I performed the standard preflight of the right seat. No discrepancies were noted. Upon checklist completion, all systems were operating correctly. All engine starts were normal, within limits, and uneventful. In attempt to taxi, the captain used normal power to start forward movement when no movement was observed, he set the power slightly higher, which prompted me to observe the engine instruments. The higher than normal thrust caused, what I believe, a brake freeze to release. There was a slight popping noise as the aircraft moved forward and the captain immediately stopped the aircraft. Speculation by ground crew that there was a compressor stall is not supported by the engine instruments. After a crew discussion, we concluded a brake was stuck closed and that was the cause of the increased power and noise. The remainder of the taxi was uneventful. Approaching the hold short, we were cleared for takeoff. I noted the wind sock and made a comment to the effect that the application of takeoff power should be slow and smooth. The flight engineer applied power and set within engine limits. I scanned the airspeed, engine instruments, and outside during the T/O roll - shadowing the rudder pedals. There was a stiff right crosswind with light to moderate gusts, which could be felt in rudder movement. The airspeed

fluctuated slightly, confirming the gusts, but not more than 3 or 4 knots. I called V_1 at 141 and rotate passing 150, to compensate for gust factor. This was discussed prior to takeoff. The captain made a smooth and coordinated rotation. The aircraft may have been 20 feet off the deck when the #2 throttle slammed back. There was a slight left yaw counteracted by increased right rudder deflection. The captain made a comment to the effect that "we are landing", pulled the remaining throttles to idle and pulled the speed brakes. I looked outside and saw we were drifting left and had an angle that was going to take us off of the runway. The aircraft settled as it went off the left side of the runway. We hit a dirt material retaining wall which caused us to go slightly airborne and finally settled in the wildlife refuge. We immediately exited the aircraft through the main door and reached safe distance from the flames.

JOSEPH R BECKER

[redacted]

6.0 Flight Engineer

Ken McNamara - FE

arrived at aircraft. very windy. Preflighted aircraft + monitored ATIS. winds were out of limits No issues with jet during preflight. Called tower, winds were reported at 250-260 / 17. Startup was normal. leaving the chocks we heard a thump. I did a walk thru, saw nothing abnormal. We assumed it was a brake locked + we broke it free. Taxi + braking normal. Cleared for takeoff, we discussed winds + to push up power slowly to ~~#~~ avoid Comp Stalls. Reached takeoff EPR 1.85/1.83, V_1, V_R Normal. At V_R #2 thrust lever rapidly retarded to the stop. Would not move. No Aurals, No Visual indication of T/R deployed. Probably made it to 20'. Jet started to go left, wing low, airspeed decreasing. Captain made decision to put it down. We landed

past 4000' marker, on shoulder, headed to left side of runway. 3 hard impacts. Slide to stop just shy of another berm + rocks. We all asked if all ok. Decided to evac jet ASAP. I had to pry/shove the cockpit door open. From galley aft, it was a wreck. Open main door + deployed slide. Saw smoke/fire/etc. we slid into muck, crawled out to runway. all I remember.

Ken McNamara,
[redacted]

Going home. This is my home phone. Cell/wallet/laptop all in jet.