Attachment 1

Operational Factors Group Chairman's Factual Report

DCA00MA030

Interview Summaries

INTERVIEW SUMMARIES

Interview:	Captain Howard Peterson
Represented by:	David McCracken, Attorney
Present:	Operations Group
Time:	1630, March 7, 2000
Location:	Mercury Air Center, Burbank CA

During the interview Captain Peterson stated the following information:

Date of birth:	[redacted]
Date of hire:	July 7, 1988
Flight experience:	Coleman Air Transport, 1979–1980, KingAir and Gulfstream-1 EG&G Corporation, 1980–1988, Captain and First Officer B-737-200
Type rating:	B-737 (1977)
Total time:	approximately 11,000 hours
B-737 time:	approximately 8,000 hours
PIC time:	approximately 5,000 hours
Position:	SWA Captain B-737 since 1993, SWA First Officer

Captain Peterson said that he received his B-737 type rating in 1976. He flew the KingAir and the Gulfstream–1 for Coleman Air Transport from 1979 to 1980. He was employed by the EG&G corporation as an FO and captain on the B737-200 from 1980 through 1988. After completing his initial and simulator training in Dallas, he was assigned to duties as a B-737 FO. To date, he has accumulated 11,000 total flying hours with about 8,000 hours in the B-737 and 5,000 hours as Pilot-in-command in the B-737. He upgraded to captain at Southwest in 1993 or 1994. He reported that his FAA medical certificate required him to have corrective glasses in his possession while flying, but he normally only used them at night. He didn't remember wearing them at the time of the accident, but he did not think that he did.

Captain Peterson stated that on the day of the accident, he had not flown for the previous five days. The accident flight was the first leg of the first day of the trip. The trip sequence started with a deadhead flight from Oakland, CA (OAK) to Las Vegas, NV (LAS). Captain Peterson lived in LAS, so he did not deadhead from OAK but checked in from LAS with crew scheduling in Dallas around 0900 on the day of the accident. The scheduled departure time for flight 1455 was 1445, and he arrived at the airport about 1400. Captain Peterson said that he met the FO while on the way to the gate area; this was the first time that they had ever flown together. The FO informed him that the inbound trip was late arriving from Los Angles (LAX); they then went to the LAS

Southwest Airlines Operations Center and found out that the delay was due to a gate hold for weather in LAS. Their airplane arrived in LAS around 1630. He and the FO met the inbound flight crew who told them that the delay was due to a gate hold for weather in Las Vegas. The captain stated that the LAS weather was cloudy and rainy. The inbound crew said that the airplane was fine and had no MELs. Captain Peterson said that the maintenance at Southwest was very good, and the fleet did not have many MELs.

Captain Peterson said that flight 1455 had a load of 137 passengers, 3 flight attendants and one deadheading flight attendant. He recalled that the flight papers reflected a required fuel load of 16,900 pounds and listed LAS as the alternate. He said that the flight pushed back between 1645 to1700, which was a little over two hours late. They were cleared to taxi to runway 19L because of the winds, which was not the usual runway for takeoff at LAS. Captain Peterson said that the delay for takeoff was about 20-30 minutes and unusual for LAS. He said that the tower reported a windshear with an airspeed deviation of ±10 knots. so he elected to use max power for the takeoff. He and the FO adjusted their airspeed bugs for takeoff. He asked the flight attendants to stay seated after takeoff until notified because he thought it might be "bumpy."

Captain Peterson said that on takeoff, ATC advised them of traffic and gave them a left turn. He reported traffic in sight; the traffic was no factor for them. He reported that during the departure, the weather was not too bumpy, so he allowed the flight attendants to perform their normal duties. The enroute portion of the flight to Burbank (BUR) was uneventful. They remained on top of the clouds most of the time. He said that they were using the weather radar, and they noticed a thunderstorm to the right of their course, which was not a factor. He elected to leave the seatbelt sign on for the entire trip because of the short duration of the flight. He said that as the flight was approaching BUR, he did not see any serious weather near the airport, so he turned the radar off. As the flight was approaching BUR, they crossed the DAGGETT VOR and then flew the LYNXX SEVEN arrival. Captain Peterson said that after they crossed the DAGGETT VOR, the FO got the current Burbank ATIS information, which indicated that the winds were from 260 degrees at 18 gusting to 26 knots with aircraft landing on runways 33 and 26. He commented that the normal runways used at BUR were runways 8 and 15. The flight crossed PALMDALE VOR and proceeded outbound on the 240-degree radial toward the JANNY intersection and descended to 8,000 feet. After passing the JANNY intersection, ATC gave them vectors and a lower altitude of 6,000 or 7,000 feet. ATC told them that a new ATIS was now current, and they could expect runway 8. The new ATIS information indicated the winds were from 240 degrees at 6 knots and runway 8 was in use. Captain Peterson stated that ATC requested that he keep his speed up to "230 knots or greater." He said the Southwest flight ahead of him was on vectors for runway 8, and it was cleared for a visual approach. ATC then asked SWA flight 1455 if it had the runway in sight and could accept a Visual Approach. Capt. Peterson said that at this time, the flight was near VAN NUYS (VNY) VOR at 3,000 feet. ATC began pointing out company traffic. He accepted a visual approach to runway 8.

Captain Peterson said that the flight was north of the localizer for runway 8 when he received a clearance for a visual approach to runway 8. The autopilot captured the localizer but overshot and corrected back and recaptured the localizer. Captain Peterson said that his radio was set to the ILS frequency, and the FO's radio was on the VNY VOR for DME. Captain Peterson said that the flight passed west of VNY at 3,000 feet, with the airspeed between 220 and 230 knots. He deployed the speed brakes, and as they slowed to 220 knots, he called for flaps 5 and gear down in an attempt to slow the airplane. He noted a 20-knot tail wind on the FMS. He remembered looking out and seeing Van Nuys Airport. At that time he disengaged the autopilot, descended out of 3,000 feet, and called for flaps 15, 25, 30, and 40. He reported that this was a quicker than normal succession; he wanted to lose altitude and bleed off some airspeed while keeping an eye on the company traffic ahead. Captain Peterson said that he saw flap settings 5, 15, 25, and 30 indicated on the flap gauge, but he was not sure he saw 40 degrees indicated. He said that he did not recall his airspeed at this time but recalled that they were a little fast for flaps 40 to come down. He did not remember passing through 1,000 feet nor did he recall the FO making the required callout at 1,000 feet above ground level. Captain Peterson explained that the SWA company procedure was to call out "1,000, airspeed and sink rate." He further stated that he did not remember if the FO made the 500-foot call out.

Captain Peterson stated that he didn't recall his airspeed at 500 feet, but he was "in the slot" and his glide slope was "really close." He was not using the HUD. He stated that use of the HUD was at the discretion of the captain except for CAT II and III approaches. He further stated that he only used the HUD enough to stay current and comfortable with it.

Captain Peterson said that he did not remember ever seeing the VASI lights on the runway. He said that as he crossed the approach end of the runway, he visually perceived that he was fast. He said that his landing lights were on and there was no rain at the airport. His touchdown was "smooth, normal" at the first 1,000 feet down the runway.

Captain Peterson said that he called for the approach/descent checklist. He said that he did not remember what speeds the airspeed bugs were set to for the first time, but he stated that it was company procedure to adjust the bugs for ½ the steady state wind plus all the gusts. The add-on for the reported wind at BUR (260 18 gust to 26) would have been V_{ref} 40 plus 17 knots. Following receipt of the new ATIS information, they reset the speed at Vref 40 + 5. He said that he remembered calling for the final/descent checklist, but did not remember if the FO read it. He also mentioned that he didn't want to start down too early because of the little airplanes around Van Nuys.

Captain Peterson said that he remembered hearing a GPWS warning "SINK, RATE, SINK RATE" and explained that the warning meant that, "the descent rate seems high to it [the GPWS]." He said that in this case, he was in visual flight conditions and did not react to the warning; he did not feel that he had to do anything special. When asked specifically whether he heard the aural warning, "WHOOP, WHOOP, PULL-UP," he

stated. "No, I don't. I just don't know." He did not see or hear any other warnings during the approach.

Captain Peterson stated that Southwest teaches procedures for a "stabilized approach". He stated that at 1,000 AGL, the airspeed should be +10 to –5 knots. He further explained that if these parameters are exceeded, the PNF should make a callout. He did not remember hearing a callout from the FO. He stated that everything was stabilized at 500 feet except for airspeed.

Captain Peterson said that on landing rollout, the deceleration was normal; however, when he looked up, the runway end seemed closer than it should have been. He thought that they might hit the wall. He got on the brakes "pretty good" and reverse, hoping it would slow. He was not sure it would stop; he did not feel the anti-skid cycling.

Captain Peterson said that near the end [of the runway], he initiated a right turn using only the tiller. The aircraft didn't seem to be slowing down as much as before, and they departed the runway about 30 degrees off runway heading. They impacted the wall. He said that he had used max braking all the way while attempting to stop and had not heard any engine compressor stalls.

When the airplane came to a stop, Captain Peterson looked at the center console for any indication of a fire warning. He said that he made a PA announcement to the cabin for everyone to "remain seated, remain seated," and then he shut down the engines. He said that he could hear the flight attendants calling for the evacuation and thought the flight attendants knew more about the cabin condition than he did. He shut down the engines; he did not call for the checklist, but he ran the checklist himself and completed it to the best of his ability. He then called the tower and requested emergency rescue equipment.

Captain Peterson said that at 3,000 feet, page three of the FMS indicated a 20-knot tail wind. He did not do any "S" turns while on final. He said that the OPC was used to calculate the new landing reference speeds when the new unway was assigned after passing DAGGET intersection. He said that he was very familiar with BUR airport, having flown into it for many years, and he had landed on runway 8 numerous times in the past. He said that he was wearing his seat belt and shoulder harness.

Captain Peterson stated that he had thought about doing a 270-degree turn to land on runway 33. He then reconsidered still thinking he could make runway 8. He said that, to the best of his knowledge, Southwest did not teach special procedures for a "high and hot approach" to keep traffic flow moving.

Captain Peterson said that he had performed pilot-initiated go-arounds at lots of places, but he couldn't remember if he had ever performed one at Burbank in particular.

He said that he ended up high and hot" on this approach because of contributing factors; such as, having to keep his speed up and the tail wind.

Interview:	Jeffery D. "JD" Erwin, FO
Represented by:	David McCracken, Attorney
Present:	Operations Group
Time:	1400 March 7,2000
Location:	Mercury Air Center, Burbank, CA

During the interview, First Officer Erwin stated the following information:

Date of birth:	[redacted]
Date of hire:	November 1996
Flight experience:	U.S Air Force F-15s and U.S.A.F. Reserve F-16s (2500–3000 hours)
B-737 time:	approximately 3000 hours,
PIC time:	approximately 2000-3000 hours in military aircraft (no air carrier)
Position:	First Officer at Southwest Airlines in November 1996

First Officer Erwin completed initial flight training at Southwest Airlines Training Center in Dallas, Texas. The new-hire training program consisted of ground school and simulator flying. He completed at least 25 hours of initial operational experience (IOE) prior to unsupervised line flying.

First Officer Erwin reported that Flight 1455 was the first scheduled flying leg of a three-day pairing. Since he lived in Utah, he elected to check-in for the trip in LAS instead of OAK. It was his first flight with Captain Peterson. The day was scheduled as a sequence from LAS, to BUR, to SJC, to SAN, to PHX, and finally to ABQ for the scheduled overnight. He had had four days off prior to this trip. He had commuted from SLC and arrived in LAS about 2 hours prior to the scheduled departure time. He ate lunch in the terminal and met with Captain Peterson at approximately 1400. They discussed the late status of the inbound flight, which was being held on the ground due to weather conditions in LAS. They both proceeded to the LAS Southwest Airlines Operations Center to monitor the progress of the inbound flight.

First Officer Erwin reported that the inbound flight to LAS arrived approximately two hours late. The aircraft turnover was uneventful, and all preflight operations were normal. Captain Peterson elected to fly the leg to Burbank. Pushback and taxi operations to runway 19L were normal. There was some cockpit discussion that they were somewhat heavy for such a short flight.

First Officer Erwin reported that Captain Peterson made a PA to advise the flight attendants to remain seated for "bumps." He reported that the takeoff from runway 19L was normal. They climbed to a cruising altitude of FL220. He believed that the seat belt sign was left on for the entire flight. He did not recall whether they were cleared for the LYNXX SEVEN arrival to BUR, but they flew the approximate charted ground track and profile from DAG to VNY. There were some "puffies" along the route-of-flight. He recalls that the weather radar was used most of the flight. He did not recall when the weather radar was turned off.

First Officer Erwin described the enroute lighting conditions as "daylight". Near PMD, he left the ATC frequency to acquire BUR arrival ATIS information OSCAR. He recalled that the ATIS stated that 26 and 33 were the active runways. He returned to the ATC frequency. He recalled the Captain's desire to land on RWY 33. FO Erwin had landed on 8 and 15 before but did not recall ever landing on 26 or 33. He felt that he had good currency with BUR and felt comfortable landing there. During the previous month, he had flown into BUR on the first leg of each trip.

First Officer Erwin reported that as they approached VNY from the North, the route was basically clear of clouds. ATC informed them that ATIS "PAPA" was now current. He left the ATC frequency and acquired the new ATIS. ATIS PAPA indicated that the winds had changed to 240 at 6 knots and the active runways were changed to 8 and 15. He also recalled that the new ATIS information indicated that the clouds were clearing out. He rejoined the ATC frequency and gave the revised ATIS information to Captain Peterson. Captain Peterson informed him that ATC had directed them to keep their speed up to 220 KIAS. Captain Peterson re-briefed the speeds for Vref and Vref + 5 KIAS (target speed). At this point, ATC called out company traffic at "11 o'clock low" that was preceding them to the airport. He recalled that it was approaching twilight, and it was difficult to acquire the called traffic against the ground lights. Captain Peterson spotted the traffic and called it to him. He relayed the visual contact to Southern California Terminal Approach Control (SOCAL TRACON). First Officer Erwin reported that their position on the approach was "tight." ATC cleared them for a visual approach to RWY 8 following the company traffic. He recalled that he had the VNY VOR frequency in his navigation radio and that Captain Peterson had the LOC frequency for BUR. The autopilot was armed in the VOR/LOC mode; the autopilot captured the final approach course, but overshot and corrected back. He recalled being at 3,000' just outside of VNY. At this time, First Officer Erwin confirmed that he had both BUR Airport and the preceding company aircraft in sight. Captain Peterson began slowing the aircraft. Passing VNY, Captain Peterson called for "flaps 5." First Officer Erwin recalled lowering the flaps. He recalled that Captain Peterson deployed the speed brakes. He saw Captain Peterson visually check his position over VNY airport and then start his descent. He switched to BUR tower frequency. He thought that Captain Peterson clicked off the autopilot at this point, but he couldn't be sure. First Officer Erwin recalled making a visual lookout at this point. He remembered that they appeared to be gaining on the preceding aircraft. He said their speed was around 200 KIAS. Captain Peterson called for "gear down and flaps 15." First Officer Erwin lowered the gear and set the flaps to

15. First Officer Erwin recalled that things started to happen quickly. He recalled being higher than they needed to be, and that they were catching up to the aircraft in front of them. First Officer Erwin recalled Captain Peterson calling for flaps 30, and then quickly calling for flaps 40. First Officer Erwin pointed to the airspeed to alert Captain Peterson of the flap limit speed. He remembered their speed was around 180 KIAS. Captain Peterson responded, "Yes, I know." He recalled setting the flaps to 30 and 40. He was aware of the aircraft's flap blow-up feature. He did not recall confirming the flap position indicator showing the flaps 30 or flaps 40 position. First Officer Erwin believed that they were moving across the ground faster than they should. He recalled having the CDU page set to the Progress winds page, but he did not recall the wind values. He did not verbalize these concerns. He said that they eventually got down "into the slot" when they were about a mile out. First Officer Erwin did not recall seeing the VASI lights. He did not recall their position on the cockpit glideslope display. He did not remember Captain Peterson performing any S-turns. He recalled watching the preceding aircraft to see if it would clear the runway. He confirmed landing clearance with tower. He did not recall a wind report from tower. First Officer Erwin confirmed that the company aircraft exited the runway when they were at about 300'-500' AGL. He recalled being a little fast, but the altitude was good. First Officer Erwin recalled that there was a pretty good tailwind. He believed that they were in a position to land. He did not recall checking the airspeed. He believed that the approach was stabilized. He said that the company taught the concept of a "stabilized approach." First Officer Erwin recalled that he believed that they were fast, but he could not recall how much. He knew that he was supposed to make deviation callouts. He said he did not remember the airspeed. He said that he did not bring the airspeed to the Captain's attention because Captain Peterson always seemed to be correcting. First Officer Erwin recalled hearing "PULL UP", but he believed that Captain Peterson was correcting. He stated that the Approach/Descent checklist was a silently performed checklist. He stated that the Final Descent checklist was a read-and-respond checklist. First Officer Erwin recalled Captain Peterson calling for the Final Descent Checklist. He stated that he did not read the checklist. First Officer Erwin stated that he visually confirmed and checked the Final Descent Checklist items. He knew that he was supposed to make FO altitude call-outs of 1,000', 500', 400', 300', 200', 100', 50', 30', and 10." When he was asked if he made the callouts on the accident flight, he said, "No, I don't think so. Not sure. I'd be surprised if I did."

First Officer Erwin recalled that they touched down smoothly near the 1,000' marker. He termed the touchdown as "very nice, smooth, no float or bounce." He did not know their speed at touchdown. He could not confirm that the spoilers deployed. He confirmed that the reversers deployed. First Officer Erwin could feel the aircraft decelerating at a normal rate. He remembered that Captain Peterson applied the brakes "prior to 80 knots"; he did not recall if he made an "80-knot" call. He did not feel the anti-skid cycling. He did not recall the reverser N1 power during rollout. First Officer Erwin did not hear any compressor stalls. He said that as they approached abeam the Southwest gates, he joined Captain Peterson on the brakes and pushed "as hard as I could." He said Captain Peterson started to turn the aircraft to the right. He felt the aircraft sliding. They impacted the blast wall and came to a stop in the street.

First Officer Erwin confirmed that Captain Peterson was okay. He ensured that the flaps were set to 40 and the pressurization mode switch was in "ground" for the emergency evacuation. He unbuckled his seat belt to leave the cockpit. He recalled that he did not read any checklists. First Officer Erwin reported that Captain Peterson made a P.A. He did not recall seeing any blood. He remembered that the jump seat was down and that something was wrong with the door. He saw that the forward service door slide was inflated in the cabin. The A-Flight Attendant was OK, but the C-Flight Attendant was trapped by the slide. First Officer Erwin assisted in freeing her. He exited the aircraft.

First Officer Erwin said that he had not previously accomplished a pilot-initiated go-around. He reported that both he and the captain wore their seat belts and shoulder harnesses during this approach. He did not remember if the captain utilized the HUD during the approach. First Officer Erwin stated that there was no specific training at SWA for "hot and high" approaches. He said that factors contributing to the approach going wrong were "a pretty good tailwind" and "ATC."

Interview:	Capt. Bob Ahders, Oakland Chief Pilot
Present:	Operations Group
Time:	0900, March 8, 2000
Location:	Mercury Air Center, Burbank, CA

During the interview, Captain Bob Ahders stated the following information:

Date of birth:	[redacted]
Date of hire:	May 1975
Flight experience:	USAF T-29 (Convair) and T-43 (B-737)
Type rating:	B-737 at Piedmont Airlines 1977
Total time:	approximately 17-18,000 hours
B-737 time:	approximately 15-16,000 hours
PIC time:	approximately 14,000 hours
Position:	Assistant Chief Pilot 2 years, Chief Pilot 3 years, Check Airman 15 years, SWA captain since 1977

Captain Ahders said personnel files were kept on all crewmembers, and those files showed no disciplinary action against either of the pilots of flight 1455. He said that he knew both pilots and had known the captain socially for over 28 years. He mentioned that he has played golf with him during some golf outings organized by Jim Hickman, the assistant chief pilot in Oakland. Jim was a personal friend of Captain Peterson. Captain Ahders said he also knew the Captain Peterson in the Air Force prior to coming to Southwest.

Captain Ahders said he received numerous letters each week from passengers questioning occurrences on flights. He remembered talking to the captain of flight 1455 about one such letter and asking him to write a response to the letter, but he didn't remember the question or response except that it was pretty routine. Those letters were kept for 6 months and this one probably didn't exist at the time. He was asked to send any existing files to Mark Clayton. He also said there were no complaints from first officers or flight attendants of Captain Peterson. He described Captain Peterson as "mild-mannered and someone who got along with everyone."

Captain Ahders said that he knew First Officer Erwin from probation interviews (probation 1 year and three interviews conducted in that year at 3 months, 7 months and 11 months). A couple of FO Erwin's probation progress reports (done by the captains he flies with), showed "needs improvement" in a couple areas, but he progressed nicely on

subsequent reports. Captain Ahders stated that these reports were pretty typical evaluations for FOs with nothing out of the ordinary.

When he was asked to explain the trip pay system, he stated that the flight crew was paid per flight segment based on mileage.

He discussed stabilized approaches: being fully configured at 1,000 ft on a visual approach and stabilized at 500 feet ("in the slot"). He said that in 25 years at Southwest, he had made maybe 5 go-arounds for traffic or other things. He also said that as a new first officer (about 2 months at Southwest) he had told a captain to go around because of an unstabilized approach. The captain did go around and Captain Ahders reported the incident to the Vice President of Flight Operations. The captain was disciplined. He discussed that SWA first officers were trained to be second-in-command, and part of their responsibility was to give information to the captain to help him do his job better.

Captain Ahders said that he did between 30 and 65 first officer evaluations a month in Oakland. When Captain Ahders was asked whether pilots are required to fill out go-around reports, he replied, "No," but he liked pilots to file "irregularity" reports to help the chief pilot address any passenger complaints and/or ATC problems.

He said he didn't know if the Captain Peterson was on anyone's "avoidance bid". He stated that the only person with access to that information was Captain Greg Crum, the Vice President of Flight Operations.

Interview:	Captain Pat M. Ford
Represented by:	William L. Robinson, Attorney
Present:	Operations Group
Time:	1400, March 9, 2000
Location:	Mercury Air Center, Burbank, CA

During the interview, Captain Ford stated the following information:

Date of birth:	[redacted]
Date of hire:	April 14, 1988
Flight experience:	U.S. Navy pilot 1980-87 (A-6)
Type rating:	B-737 at Houston Hobby Airport in 1987
Total flight time:	approximately 11,600 hours
B 737 time:	approximately 10,000 hours
PIC Time:	approximately 6,000 hours
Position:	Captain in February 1993, FO B-737 in April 1988

Captain Ford reported that the first and last time he flew with First Officer Erwin was in January 2000. They flew the whole month together, which was about 75 to 80 hours of actual flight time. He found First Officer Erwin to be very well qualified: an "above-average" co-pilot, very likable, pleasant, with good aviation skills. He noted nothing unusual in his behavior.

Captain Ford reported that he didn't really offer First Officer Erwin any advice or suggestions but did share some of his personal techniques. One of the techniques he suggested was to hold off using the OPC until after engine start. Another suggestion he remembered offering First Officer Erwin was to use "flight level" when affirming or confirming altitudes. Captain Ford stated that First Officer Erwin was receptive to all his advice.

Captain Ford stated that it was a pretty uneventful month with no unusual weather or other issues. He stated that they swapped legs back and forth. Captain Ford reported that he always flew the first leg when he was flying with a co-pilot he hadn't met before. They flew from Salt Lake to El Paso but never flew into Burbank on that flight pairing; he had flown into Burbank many times though. He stated that Burbank was considered a "Special Airport" for SWA. He reported that they were required to stay current with Special Airports by reviewing the company charts and plates.

Captain Ford reported that during their month together, First Officer Erwin complied with all required call-outs and company procedures. He stated that he thought First Officer

Erwin would notify him if he were out of "the slot"; he didn't think that he would be able to intimidate him. He stated that he had no reason to believe that First Officer Erwin would not speak up if it were necessary.

Captain Ford did not have the opportunity to observe First Officer Erwin fly an approach down to minimums. He stated that First Officer Erwin never had to bring any parameter exceedances to his attention during their flight time. He thought that First Officer Erwin was fairly close to upgrade, and therefore he offered him some helpful advice about "headwork" (always think ahead) and paperwork. He stated that he used seatbelts and shoulder harnesses; he didn't take the shoulder harness off until after the flaps had been retracted. He used the HUD on every landing regardless of whether he or the first officer was performing the landing. He also employed the HUD on all his takeoffs. He explained that the HUD provided a lot of valuable information and allowed the pilot the opportunity to continue looking outside. He stated that company procedures dictated that they were required to use the HUD on any landing below CAT 1 minimums.

When asked about the approach/descent checklist, Captain Ford reported that the pilot not flying (PNF) accomplished the checklist silently. He stated that the final descent checklist was completed in a challenge/response format. When asked whether company procedures required a briefing for a visual approach, he stated that it was not required, but that he would review the runway, winds, etc.

Captain Ford reported that he had performed a pilot-initiated go-around once when he had been on an IFR approach in San Diego and realized that he was not in good position to land. He stated that company procedures did not require him to complete a report regarding the go-around.

Captain Ford said that SWA teaches "stabilized approach" procedures. He explained that at 1,000 feet, they must have the airplane fully configured and ready to land. At 500 feet; that they must be "in the slot." He stated that for a deviation of +10/-5 knots from Vref, or for a 1-dot localizer/glide slope deviation, a call-out was required.

Captain Ford reported that the captain always armed the speed brakes. He stated that the affirmation of speed brake arming is on the final descent checklist: "Armed, green light." He stated that there was no company requirement to call out "speed brakes deployed" on landing. He explained that if they didn't deploy, it should be called out, but there was no specific requirement.

Captain Ford was asked about the ground proximity warning system (GPWS). He answered that an aural warning of "SINK RATE, SINK RATE" would mean that he should get the nose up and adjust the sink rate. He further stated that an aural warning of "PULL UP" would get his attention even more. He stated that in that case, "all bets are off;" he would make a larger correction. He reported that he had heard a "SINK RATE" warning before but not a "PULL UP" warning.

When he was asked whether he had ever made a report about a problem with a first officer, Captain Ford stated that he hadn't done that specifically, but he had filled out a lot of probationary pilot evaluation forms.

Interview:	Captain David W. Shockley
Represented by:	William L. Robinson, Attorney
Present:	Operations Group
Time:	1750, March 9, 2000
Location:	Mercury Air Center, Burbank, CA

During the interview, Captain Shockley stated the following information:

Date of birth:	[redacted]
Date of hire:	March 3, 1992
Fight experience:	US Navy 11 years 1979-1990, EA6B & F-14A/A+ US Navy Reserve Norfolk, VA, C-9B US Air January 2, 1990–January 4, 1991 B-737-300, furloughed
Type rating:	B-737 January 1991 at Airline Crew Training in Dallas, TX
Total flight time:	approximately 10,000 hours
Total Navy time:	approximately 2,000 hours
Total B-737 time:	approximately 7,500 hours
Total PIC time:	approximately 3,700 hours
Position:	Captain at Southwest since November 1995, Designated Check Airman in October 1998

Captain Schockley said that he had flown with J.D. Erwin 2-3 years ago on a 3 or 4-day trip, and he was again paired with him for the month of February 2000. J.D. called in sick for the pairing during the first week of February; for the second pairing of the month, Dave was replaced to go to Dallas to administer simulator checkrides; for the third pairing of the month, they flew together on the first day and on the last day of a 3-day pairing; and for the 4th pairing, they flew a 3-day trip together. The pairing was February 27-29, and it consisted of approximately 22-23 hours of actual flying. On the first day, the flight originated in Oakland (OAK); then it went Burbank (BUR), Sacramento (SMF), San Diego (SAN), Las Vegas (LAS) and San Antonio (SAT). On the second day, they departed SAT and flew to LAS, OAK, SAN, LAS, and ABQ. On the third day they departed ABQ to ELP, PHX, and OAK. Captain Schockley flew the first leg to BUR; he explained that it was his practice to fly the first leg of a pairing. They flew a company procedure approach into Burbank due to bad weather. First Officer Erwin flew the approach with the autopilot "ON", and Captain Schockley monitored the approach. Since it was his flight leg, Captain Schockley took the aircraft controls when they reached minimums and performed the landing.

Captain Schockley said J.D. did a great job and displayed good judgment throughout the trip. He considered J.D. to be an above average pilot. When he was asked to rate J.D. on a scale of 1-10, with ten being the best, Captain Schockley rated him as a "9." Captain

Schockley remembered making three specific comments about J.D.'s procedures during the 3-day trip. The first was about J.D.'s tendency to have the checklist out but recite it from memory instead of reading from the checklist. Captain Schockley did say that he was backing him up by checking the switches as the checklist was accomplished. The second was a tendency to duck under the glide slope on approach, and the third was to start cleaning up the cockpit prior to exiting the runway and prior to the captain calling for the "flaps up, clean up" flow after landing. Captain Schockley thought that all comments were graciously accepted and complied with for the rest of the trip.

Captain Schockley stated that this pairing was a normal bid; he was not sent out as a check airman to evaluate J.D. He said that, in fact, he was stunned to find out that it was J. D. in the accident aircraft. When asked who armed the speed brakes for landing, he responded that it was the Captain's responsibility. Captain Schockley stated that he had performed pilot-initiated go-arounds. He said that he had initiated and performed three go-arounds in the recent past due to wind shear in BUR, LAS, and ONT. He had also performed go-arounds for unstable approaches on his and the first officer's leg, but he initiated all of them. He stated that no specific reports were required following a go-around. Captain Schockley stated that he used the HUD on every takeoff and landing. Captain Schockley said that he did not remember whether J.D. had made any deviation calls on any leg during their 5 days together.

When he was asked whether he had ever been to Professional Standards to discuss a pilot's performance, Captain Schockley answered that he had.

Captain Schockley stated that for every approach, standard deviation callouts for airspeed, localizer, glideslope and sink rate were required to be made by the non-flying pilot. He said that as a first officer, he had never taken the aircraft controls from a captain.

Interview:	Mike Cornelius, First Officer
Represented by:	William L. Robinson
Present:	Operations Group
Time:	1000, March 8, 2000
Location:	Mercury Air Center, Burbank, CA

During the interview, First Officer Mike Cornelius stated the following information:

Date of birth:	[redacted]
Date of hire:	October 22, 1998,
Education:	Graduated from Embry-Riddle University
Type rating:	B-737, Carnival Airline 07-97 B-757, American Trans Air (ATA) 1998
Total flight time:	approximately 5000 hours, (all civilian flying no military)
Total B-737 time:	approximately 1100 hours
Position:	SWA First Officer, Completed SWA ground school and simulator training at the Training Center in Dallas. Completed 25 hours IOE (initial operating experience). Conducted pre-interview simulator checks Pan Am Flight Training

First Officer Cornelius was the pilot flying (PF) of SWA 1713 (B-737) from Sacramento (SMF), CA. to Burbank (BUR), and landed just prior [less than 2 minutes] to SWA 1455.

First Officer Cornelius reported that they were cleared for a "FERNANDO FIVE ARRIVAL" to BUR. The ATIS was "OSCAR" and the wind was reported as 260 at 18 knots gusting to 26 knots. He stated hat ATC told them to "keep [their] speed up" and to disregard the published speed restriction at PIRUE Intersection. The weather radar was "on", but was not painting any significant weather. He discussed the approach with Captain Robert Seltzer (pilot not flying/PNF), and briefed him that they would be landing on runway 26. He entered the data for runway 26 into the On-Board Performance Computer (OPC) and set the "airspeed bugs." SOCAL then issued them the new ATIS information ("PAPA"), and they noted that the wind had changed significantly to 240 at 6 knots, and they were now landing runway 8. They re-briefed the approach for runway 8 and entered the data into the OPC. They also brought up "Progress Page 3" on the FMS-CDU for additional wind information. They were cleared for a visual approach to runway 8 and the standard call-outs (1,000', 500', 400', 300', 200' 100', 50', 30', 10') were made. It was noted that the tail wind at 3,000' was 20 knots. The tail wind had decreased to less than 10 knots at 1,000'.

First Officer Cornelius classified the landing touchdown, roll out, and deceleration as "normal." He stated that they touched down in the first 1,500 feet of the runway; the runway conditions were "dry," and the lighting conditions were "daylight." When he was asked to describe his depth perception at the time of the landing, he reported that he could see all the way down the runway. He further stated that the VASI lights were "on."

First Officer Cornelius stated that as they turned off the runway abeam Gate A3, the tower had asked them to expedite clearing the runway for "company traffic on 1-mile final." This was when he first became aware of Flight 1455.

First Officer Cornelius was questioned about SWA procedures for standard callouts on a visual approach. He stated that the FO called out "1,000 feet" and the captain called "1,000 feet, airspeed and sink rate." The FO's next calls were "500, 400, 300, 200 feet," then using the radar altimeter, the pilot not-flying (PNF) called "100, 50, 30, 10." When he was asked whether the captain "challenges" if a FO didn't make a required call-out, First Officer Cornelius replied that the captain usually challenged him, but he wasn't sure whether it was required. He explained that they were required to be fully configured at 1,000 feet. Deviation callouts were for target airspeed +10/-5 and 1 dot for glide slope/localizer. He stated that the PNF was required to tell the PF if they were out of those parameters. He reported that at 500 feet, they were required to have the engines spooled, along with the aforementioned parameters. When asked about glide slope/localizer deviation, he stated that the PNF would say, "dot low," and the PF would say, "correcting." First Officer Cornelius explained that they could make corrections at 1,000 feet, but at 500 feet they would be required to perform a go-around if they were out of parameters. He reported that company policy directed that if the aircraft were outside the parameters, the PNF called out the problem to the PF. If there were no response, the PNF called for go-around. If there were still no response, the PNF then took control and executed a go-around.

First Officer Cornelius stated that he strove, as a technique, to be at 10,000' and 250 knots when he was within 35 miles of the landing field. He also mentioned that the performance card in the cockpit also gave descent performance guidelines.

First Officer Cornelius reported that SWA did not have any special training for "high and hot" approaches. He explained that trip pay changed to hourly pay when the schedule was exceeded by 12 minutes. He stated that there was no premium pay for cutting scheduled flight time. When asked whether he felt pressure to complete the mission at any cost, he replied, "No."

First Officer Cornelius stated that the captain was responsible for arming the speed brakes, and there was no call-out that it is deployed. He reported that when the speed brake was armed, a green light illuminated.

First Officer Cornelius stated that he wore his seat belt and shoulder harness for takeoffs and landings.

Interview:	Roland Tabije, First Officer
Represented by:	William L. Robinson, Attorney
Present:	Operations Group
Time:	1200, March 9, 2000
Location:	Mercury Air Center, Burbank, CA

During the interview, First Officer Roland Tabeje stated the following information:

Date of birth:	[redacted]
Date of hire:	August 14, 1999
Flight experience:	Comair Aviation flight instructor, Aloha Island Air 1991–1999
Type rating:	B-737 (Flight Training International in Denver, CO)
Total flight time:	approximately 7,300 hours
Total B-737:	approximately 250 hours
Total PIC:	approximately 1,800 hours (Twin Otters and Dash-8s)
Position:	SWA First Officer

First Officer Tabije has over 7,300 hours of flight experience. He began flying Comair Aviation as a flight instructor in 1990. He then flew with Aloha Island Air from 1991-1999 in Twin Otters and Dash-8s. He has flown over 1,800 hours as PIC in these aircraft. He has been with Southwest Airlines for 7 months flying as an Oakland-based first officer, accumulating a total of about 250 hours in the B-37. He received his B-737 type rating in the summer of 1998 (Flight Training International in Denver, CO).

First Officer Tabije reported that he flew with Captain Peterson on February 11, 2000. They flew a sequence from OAK, to SAN, to SMF and finally to SAN for the overnight. He recalled that Captain Peterson became "stuffed up" and elected to call in sick and be replaced at this point. The sequence totaled about 4.5 flying hours. He recalled that he had flown the SAN-SMF leg and that Captain Peterson flew the other two legs.

When asked to describe his experience flying with Captain Peterson, First Officer Tabije stated that there was nothing out of the ordinary. He called Captain Peterson a "usual captain". He stated that Captain Peterson operated according to company procedures. He was never uncomfortable with him during takeoffs or landings. He found Captain Peterson easy to get along with, and rated him as an average captain in all respects; "standard: everyone seems to be the same."

First Officer Tabije described his Crew Resource Management (CRM) training at Southwest as a full-day training with company personnel, crew schedulers, and dispatchers.

First Officer Tabije was asked a variety of questions regarding Southwest company procedures. He described the visual approach procedure callouts as follows: at 1,000 feet, both crewmembers called out "1,000 feet", the captain called out "airspeed" and "sink rate", and the first officer cross-checked. The first officer then called "500 feet," "400 feet," "300 feet," "200 feet" above touchdown zone elevation on the barometric altimeter. The non-flying pilot then called "100 feet," "50 feet," "30 feet," and "10 feet" from the radar altimeter.

First Officer Tabije then described being "in the slot," as: 500 feet above touchdown zone elevation, on profile, on airspeed, no large turns, stabilized approach, and in a position to land.

First Officer Tabije explained that the required deviation callout for airspeed was +10 knots, -5 knots from target speed. Any deviation in excess of those parameters required a call-out of "airspeed." He mentioned that the allowable glide slope and localizer deviation was 1 dot.

First Officer Tabije reported that he was trained to back up a visual approach with any available navigational aid.

Given a situation of captain incapacitation on approach, First Officer Tabije stated that he would call "missed approach", take control of the aircraft, and execute the missed approach.

He reported that he used his seat belts all the time and his shoulder harnesses up to 18,000'. He noted that this was his personal technique and acknowledged that it was beyond what was required by the company.

First Officer Tabije stated that the captain was responsible for arming the speed brake. Verification of this was completed with the Final/Descent checklist when the pilot flying confirms, "Armed, Green Light". He stated that at touchdown, there was no required callout for speed brake deployment or failure to deploy. While First Officer Tabije had never seen a speed brake failure, he assumed that the captain would manually deploy them after touchdown. He recalled that there was an audible "zzzzt" sound as the speed brakes lever was driven aft. He stated that he, personally, relied on a visual check of the speed brake lever position as he reached for the reverser levers.

First Officer Tabije discussed the Approach/Descent checklist. He stated that the PNF silently completed the checklist following the approach briefing. He stated that an approach briefing included the landing runway, weather, approach speeds, and a charted

approach briefing. He stated that a visual approach briefing included speed, winds, and pertinent weather. Additionally, it should be backed-up by an approach chart.

First Officer Tabije described the policy of probationary pilot evaluations. He stated that as a rule, captains discussed the completed form with him, and he initialed it prior to being handed in. He recalled that management pilots met with him every 3 months. He reported that he had no knowledge of probationary pilots receiving any additional training or counseling.

He was given the hypothetical situation of receiving a runway change while at 10,000 on arrival. First Officer Tabije did not recall any special company procedure for adjusting to the new runway. He said he would personally complete an OPC compu.at.on and brief the captain.

In preparing for a visual approach, First Officer Tabije said that he would tune and identify the navigation aid and have the approach chart in front of him. If he were on a VOR and wanted to join the Captain on the ILS frequency, he would make the frequency change and announce, "joining you" to the captain, prior to the final approach fix (FAF).

First Officer Tabije reported that he had performed two go-arounds while employed by Southwest. One was due to a UAL aircraft on the runway at PHX. The other was a pilot-initiated go-around at Ontario (ONT). He stated that he had been high on the profile. He initiated the go-around at 1,500 AGL. He felt the captain fully supported his decision. He recalled that the captain advised him to make a personal logbook entry to document the event, but he reported that there was no special report required by SWA. When he was asked why he made the go-around at 1,500 AGL, he stated that there was no way to be stabilized by 500' AGL.

Interview:	Executive Jet Aviation Pilots, Steve Cherwien and Jeff Robertson
Present:	Operations Group
Time:	1530, March 10, 2000
Location:	Mercury Air Center, CA

During the interview of the Executive Jet Flight 278 DA 2000 flight crew, Steve Cherwien (left seat, pilot flying) and Jeff Robertson (right seat, pilot non-flying), stated the following information:

Executive flight 278 (N278QS) was enroute from San Jose to Burbank, via the AVE VOR. Burbank was reporting visual conditions with no precipitation. SOCAL Approach was handling their arrival. When asked if they had heard Southwest flight 1455 on the frequency, Steve could not recall, but Jeff reported that he was "aware there was a Southwest aircraft ahead of us." He recalled that they were number 2 or 3 on approach, and 2 to 2 ½ miles behind Southwest on final. Neither pilot could remember whether they were issued a speed restriction; they were instructed to descend to 11,000 feet and cross PIRUE at 250 knots. SOCAL approach issued them the ILS approach to runway 8 and told them that they were 2 miles behind a Boeing 737. While on the approach at 1,300 feet AGL, they received a traffic advisory: "aircraft at 1:00, 2 miles, 600 feet below, expect a go-around." They both heard Southwest call "its okay folks, folks we're alright, everything is okay, everyone stay seated." They initiated a go-around between 600 to 700 feet AGL.

The pilots were asked about the winds aloft. They stated, "the highest it got was a 7-knot knot tailwind—I didn't have the actual readout—we get an arrow. It's on a PFD and has a magenta arrow which points."

The pilots said that they did not see the accident aircraft visually but had him on TCAS.

Interview:	Captain Greg Crum, VP Flight Operations
Present:	Operations Group and Human Performance Group
Time:	1400, March 14, 2000
Location:	Southwest Airlines Flight Operations, Love Field

During the interview, Captain Crum stated the following information

Date of birth:	[redacted]
Date of hire:	January 4, 1979
Flight experience:	USAF 1970–1978, flew C-130s, Aircraft Commander and Instructor Pilot USAF Reserves in 01-79 (active reservist for 3 years)
Type rating:	B 737, Obtained rating at UAL in Denver
Position:	Vice President Flight Operations since 12-99; Director of Flight Operations since 08-97; Named Systems Chief Pilot in 08-95; DAL Chief Pilot since 08-91; Upgraded to Check Airmen at SWA in 1985, performs line checks, simulator checks, IOE, etc., SWA B-737 Captain since 03-81, Became SWA B-737 FO in 01-79

Captain Crum said that he had no personal knowledge of either of the two flight crewmembers on the accident airplane.

He stated that he and Captain Painter shared a dual responsibility of overseeing check airmen. Captain Crum said that check airmen reported to Captain Painter when they were in flight training and then they reported to him when they served under chief pilots. SWA had around 110 check airmen in total; there were about 10 standards check airmen over them.

Captain Crum said that the Standards Check Airmen had the primary responsibility overseeing the standardization of the check airman in terms of administering line checks, proficiency checks, etc. Their job was to ensure that the check airmen themselves were standardized, and that they were performing in a way that was consistent with SWA guidelines. Captain Crum considered their check airmen to be the best in the industry.

After working 21 years at SWA, Captain Crum said that he could discuss most aspects of flight operations. He distinguished between a VMC and an IMC stabilized approach. He said that in VMC at 500 feet, a pilot must be in the slot, on glide path, on air speed, and in a position to make a landing. If you don't meet those criteria then you should go around

because you are not in a safe position to make a landing. He said that you can back that up to the 1000 foot call where you should be fully configured, and then back it up further to meet airport restrictions and the operational restrictions of the airplane.

Captain Crum said that landing criteria at 500 feet VMC included: having the airplane within 5 knots of target airspeed, and the rate of descent less than 1,000 fpm. You should "shoot" for flaps to 5 and 170 to 180 knots and be on glideslope in order to be fully configured requirement at 1,000 feet.

Captain Crum said that if an FO called out an airspeed and/or sink rate deviation, the captain should acknowledge and say, "correcting." He thought that executing a go-around would depend on the extent of the deviation. If the airspeed were within 6 knots, then probably not. He said that was where judgment came in. He was not familiar with the "decision tree," or with a way of teaching pilots to make these decisions.

He has made go-arounds as a line pilot. He remembered one at runway 27 at SAN, where Santa Anna winds were present. He started down at FAF (final approach fix), and the runway just dropped out and away from him. This was on a B-737-200, so the airplane did not have a wind readout. Nevertheless, it was obvious that when he was at no lower than 1,000 feet, he had a "pretty significant tailwind." He and the FO (he was the captain), talked about that for some time afterwards. He didn't file a go-around report nor was one required.

Captain Crum said that SWA taught techniques for tailwind landings. He said that they didn't necessarily train for that in a normal PT or PC, but it was in the manual. He was sure that there was something in the manual regarding short runways, but he wasn't sure exactly what it was.

Captain Crum said that SWA put out information to pilots any time it became aware of climatic effects that everyone needed to be aware of. SWA then issued either a bulletin, or a "read before fly" to get the information out in a timely manner. He was not sure that SWA had given anything out on Burbank in this way.

Captain Crum said that there were 3 books out in the crew domicile:

1. Read Before Fly: this only included information that absolutely had to be read before that day's flying.
2. Crew Information Book: included material that was nice to know, it might include hotel changes, relevant newspaper articles.
3. Irregularity Report Book: In this case, if Captain Crum saw an irregularity report that he thought all the pilots should see, he would de-identify the report and include just the overall facts for the pilots to read at their leisure.

Captain Crum said that pilots were responsible for reading the "Read Before Fly" book. Pilots didn't have to sign it as was required in the USAF. There was no way to check

whether the pilots had read them. If there was real critical information about an airport, they included that in the dispatch papers to assure that pilots had access to them. They also included Read Before Fly articles on the company website. Captain Crum said that within 6 months, he hoped to establish a method of assuring that pilots can read them at home on the company intranet.

CRM started around 1989. SWA had Dr. Helmreich and Bill Taggart from University of Texas establish it. He remembered going through check airman CRM training. Pilots went through line pilot CRM, and check airman went through a second one.

Captain Crum said that CRM was given to all new-hires and to captain upgrades. They also had made it integral to emergency procedures training, and other aspects of regular training. He said that SWA might take a situation that a crew had encountered and ask the crew if they would like to participate in reconstructing the incident. They would develop a visual presentation of what had transpired. If the crew agreed, the crew provided a voice over to the presentation and just went over the whole scenario. This presentation was not "airing dirty laundry," but rather, it was a mistake that all pilots could learn from. This was done yearly. It was a computerized visual presentation that was part of the recurrent training. They probably had 4 or 5 situations this year that were covered.

Captain Crum said that he was notified of all failed check rides. What happened then depended on the severity of the failure. That pilot or crew went into a de-briefing with Captain Painter and/or the instructor. They reviewed the check ride. The check airman provided a detailed explanation of what he observed. From that, Captain Painter developed a retraining program. There might be additional classroom training and one or two additional trainers, and then an additional check ride. If a person failed again, he went through process again. After three failures the pilot was terminated regardless of rank, seniority, etc. In the last 6 months, one pilot had been terminated for substandard performance, a new hire. The FAA became involved after the second failure; it was their option as to whether they would observe the 3rd checkride as part of their 609 action.

Captain Crum said that the relationship between SWA and the POI was excellent. He stated that they were a "great group of individuals." The FAA held SWA to high standards. If the FAA had a notion that standards were not being met or that SWA's training was not meeting FAR requirements, the FAA didn't hesitate to bring it to SWA's attention. He had crossed swords with them, and the FAA, had won.

Captain Crum believed that the quality of surveillance was excellent; he didn't think that it could get better. He believed that if inspectors were all like the POI and Mr. Phil Lerum, he would like even more surveillance ("a hundred of them"). He said that for the amount of staffing the FAA had available, they were providing the "absolutely best" surveillance that they could.

Captain Crum said SWA pilots did not have to explain delays, diversions, or fatigue calls. He stated that, "this is a marathon race we are running, not a sprint." He said that over 99.9% of the time, SWA pilots would make the best decisions based on what they saw at the "pointy end of the stick." SWA had strict hiring, based as much on attitudes as much as stick and rudder skills. By the time somebody became captain, after about 5 years, SWA had an excellent aviator was in the left seat.

Captain Crum said that SWA was different because of who they hired and because they didn't have a hub and spoke system. SWA went to great lengths to make every airplane look alike. Every B-737-200 was exactly alike (except for 2 of them); every B-737-300 was the same as every B-737-500 and every B-737-700. SWA wanted pilots to be quick but not rushed. Everybody was trained to do his or her job as efficiently and as safely as possible. It was not just cockpit crew, but maintenance personnel, baggage handlers, refuelers, etc.

Captain Crum said that no changes had been made in operations at this time based on the accident. He said that once SWA determined what happened, it would take a look at what changes needed to be made as far as procedures, or areas that should be emphasized. The flight crew was off flying status until further notice. There was no plan to retrain them at this time. Captain Crum wanted to see what all the facts were before he made a decision concerning that matter.

When a pilot failed a check ride, the check airman kept a grading sheet that had every task on the profile that was completed. There was either an "S" or a "U" placed in each box. Each task was numbered and a narrative was provided on the back. The forms were maintained for 48 hours. There was no reason to keep a document for a "normal run of the mill PC." If someone were having troubles, they would maintain the records because they would need to have them documented for the Southwest Airlines Pilots Association (SWAPA).

Captain Crum stated that their relationship with SWAPA was excellent probably because all pilots at SWA had their roots in SWAPA. They were all members. He was an associate member and was the insurance committee chairman for a few years. Captain Painter was a domicile chairman for a few years. At some point in their careers, they meandered into management. There was a great deal of respect for SWAPA, but that was not to say that they have not had their differences. They looked at a grievance not as a fight but as a way of reaching agreement. He said that their contract was a living document, and over time some changes would have to be made. SWAPA represented the pilot group extremely well. The two parties were accused at times of "being in bed" with each other, but that was the farthest from the truth. He believed that SWA's relationship with SWAPA was what every airline should be striving for. SWAPA had an excellent Professional Standards Committee. He said that SWAPA had a Hotel Committee that surveyed hotels in all the cities where they had overnights, and that the committee signed the contracts with the hotels. SWA pilots had the best quality hotels at the lowest cost in the industry.

Captain Crum said that Salary was based on a trip of 55 minutes; it was based on the concept of the short haul carrier. When SWA started out, every trip was 50 to 55 minutes. In this way, it was comparable to American Airlines or Delta Airlines where every trip is one hour. It was just SWA's way of adding up the number of trips and hours. This had been modified over the years, but it was still based on 55 minutes, 240 miles. When a pilot bid on a trip for the month, it would have all of the sequences, and every sequence would have a value, so at the end a pilot could tell how much the trip was worth. Captain Crum said that if a pilot wanted to pick up more trips, and he were legal to do that, he could. If a pilot wanted to give away a trip, and somebody wanted to take it, he could do that too. If a pilot wanted to make more money, he could, and if a pilot wanted more time off, he could get it. Within the system, there was no rationale for a pilot to fly fast or get in early, because if a pilot got in early he would still get paid for the trip, and if he got in late you would start getting 1/10 of the trip for every 5 minutes he was late. Pilots were paid for weather and maintenance cancellations. If a pilot blocked in more than 11 minutes late, he would get paid more.

Captain Crum stated that Captains had a proficiency check/proficiency training every 6 months. The system that they had in place had served them well for 29 years. SWA didn't believe that changing in mid-stream would serve the company or pilots well. There was something to be said for bringing in pilots every 6 months, even if it cost the company more. Captain Crum was thankful that the company had allowed Flight Operations to make decisions based on safety and not on bottom line. He said that if someone looked at the airplanes and the equipment that had been put in service, none of it would pass a cost/benefit analysis; for example, SWA installed HUDs, predictive and reactive windshear, and alternating landing lights for safety benefits. These items cost the company a lot of money, but there was a huge safety buffer that this provided.

SWA had about 3,250 pilots on board. They had hired 350 in 1999. A number of factors required hiring more pilots than anticipated: more rest rules required by FAA, and side letter with SWAPA on life style issue. He estimated that about 100 pilots were hired because of those two. Of the remaining 250, about 95% were due to growth and 5% were due to retirement and medical LOAs.

Captain Crum said that SWA anticipated hiring between 300 and 350 pilots in 2000. SWA would get 32 additional airplanes; receiving 31 from Boeing and leasing a B-737-700, and it would phase out 2 B-737-200s. By the end of 2000, SWA would have 33 B-737-200s, 25 B-737-500s and 185 B-737-300s, and the rest would be B-737-700s. Pilots had a common line and could fly any type airplane on any one-day. The B-737-200 had analog instruments where the B-737-700 had LCD displays. One of their goals as the launch customer for the B-737-700 was to do their best to replicate the round gauges on a flat panel display, so that there was not a huge transition for the pilots to make. The only real difference was the map display, which was not on the B-737-300 or B-737-500 but was on the B-737-700. FMS was installed on the B-737-300, B-737-500, and the B-737-700. Pilots were trained to use the FMS, but they didn't use it for approach.

Basically, pilots used it for replicating the flight plan, and they could only use it above 3,000 feet. SWA did not take the next step for using it for arrivals. SWA had contemplated that kind of use, and it would take that step later in the year. SWA used FMS as a "direct to" tool. SWA did not activate the vertical navigation mode of the autopilot and deactivated the auto-throttles years ago. Captain Crum said that SWA's philosophy was that once procedures took the throttles out of the hands of the pilots, they became monitors, and SWA wanted pilots to fly the airplane and not just monitor it. Although pilots could use certain aspects of FMS for performance, their main airplane performance tool was the OPC, an onboard performance computer, which was on all SWA's airplanes.

Captain Crum said that SWA pilots conducted the approach descent check when they descended through 18,000 feet, which included a review of weather and the "10-7 page" for any information regarding arrivals. He said that this page was an historical document about problems concerning that particular airport. Pilots briefed the Jeppesen page, the flap setting, the Vref and target speeds, and decided who would fly approach. If the assigned runway were changed thereafter, the crew would have to give a modified briefing of any changes by reconfirming flap settings, and discussing any changes, including environmental changes that they needed to be aware of.

Captain Crum said that when there was no time to brief the new approach, pilots had to make time by holding, vectors, etc. The last thing a pilot wanted to do was put himself in a rushed environment.

Captain Crum said that SWA check airman were better than those of other airlines based on its operational history, which included 29 years without a fatality and operations out of Midway (MDW) and Detroit city without any incidents. Until this accident, SWA operated at Burbank without an incident. The low number of violations they have had, their safety record, their standardization program; all have had a huge impact on the safety record. SWA lost a few check airmen because they did not meet SWA's attitudinal standards; these check airmen were overbearing and stuck out like a "sore thumb." SWA advised these pilots that they were no longer needed as check airmen. SWA wanted their check airmen to be professional and caring. Captain Crum said that check airmen should share the philosophy that safety is paramount and should treat their fellow airmen in a kind and caring manner.

Captain Crum said that SWA had no plans to go to an Advanced Qualification Program (AQP). SWA considered AQP, but then it went back to Single Visit Training (SVT), and it had no plans to change. The FAA did not encourage SWA to switch. He said that SWA met with FAA once a month to discuss all the issues at hand and all the possible FAR modifications. They looked at training and all programs that were available, and this was one that they have discussed.

Captain Crum said that less than 2% of SWA pilots had failed check rides, and less than one pilot per year failed two checkrides. Neither one of these accident pilots had failed

two checkrides. He said that pilots had a number of avenues available when pilots complain about other pilots that included: Professional Standards and a no-notice line check, which occurred less than once a year. A pilot could choose a Professional Standards meeting or to have a sponsor; this could be twice a year. He was not aware that any of these avenues were taken with the two accident pilots.

Captain Crum said that SWA pilots had to "fly" the airplane because they didn't have the amount of automation that other airlines had. SWA's other distinguishing mark was the pride that their pilots had in themselves. The pilots were proud of the relationship they had between themselves, and other employees. Pilots weren't looked upon as prima donnas, but they were looked up to because of their position. Captain Crum said that SWA pilots were pro-company. He said that the environment here at SWA was that safety was "Number 1." This philosophy was portrayed through the training that they received and through the review of the incidents that they conducted. There was no pressure from management to get the mission completed nor was there any follow-up on fatigue calls, diversions, delays. He believed that this was the basis and theme for the pilot group, and he hoped that the pilots would always think of safety first. Captain Crum said that it took courage to make those decisions because you had to fight the subtle pressures that you allowed to "build on yourself."

Captain Crum stated that he visited every upgrade class and as many recurrent training classes as he could. He stated that 65% of his pilots are commuters; he commuted to Houston for 5 years. Pilots usually bid lines that got them home by the quickest way possible. Sometimes that time frame was as short as ½ hour between landing and the last airplane that could get a pilot home. If pilots allowed it, commuting schedules could induce pressure. Captain Crum said that pilots had to deal with delays; sometimes there might be 137 passengers in the back who could get upset. Pilots needed to ask themselves the question whether they can make a safe approach or whether they should hold or divert. If they diverted, the captain then had to explain the delay to the passengers.

Captain Crum said that he went to Little Rock for 3 days to observe the American Airlines (AA) accident investigation. SWA had just gone through a rewrite of its corporate emergency plan and the company wanted to attend the hearing to see how AA reacted to their accident. This was an accident that SWA felt could possibly happen to them. SWA had an airplane 30 minutes behind AA 1420 going into Little Rock. Even though Captain Crum had been to the school, he said that it was important that SWA's Go Team observe the investigation. He said SWA had made no changes in training or procedures as a result of the AA 1420 accident.

Interview:	J.D. Erwin, First Officer (second interview)
Represented by:	David McCracken, Attorney
Present:	Operations Group and Human Performance Group
Time:	1400, March 14, 2000
Location:	Southwest Airlines Flight Operations, Love Field

During the interview, First Officer Erwin stated the following information:

Date of birth:	[redacted]
Date of hire:	November 1996
Flight experience:	USAF, F-15s; USAF Reserves, F-16s
Total B-737:	approximately 3,000 hours
Total PIC:	approximately 2,000–3,000 hours
Position:	SWA First Officer

First Officer Erwin said that they came to a halt in the street. He reached up and hit the pressurization switch; he knew the flaps were down. He asked the captain if he was okay, and the captain said, "Yes." Then First Officer Erwin said that he would have to go back to reassure the passengers and see if everyone was okay. The captain made an announcement to the passengers on the PA to remain calm. The First Officer Erwin said that his earpiece would have been out of his ear so he is not sure whether he heard the captain over the PA or just in the cockpit.

When he arrived at back, by the forward service door, he saw that the slide had inflated inside the galley. He didn't remember if the cockpit door was open or whether he opened it. He had repeatedly thought about this moment, and he was still not sure that he had a complete picture of it yet. First Officer Erwin said that as he left the cockpit, the A-flight attendant was talking to him. The passengers were "extremely calm." A few had gotten up, but most were seated and very quiet. One of the flight attendants could not move her arm to get out of the harness; she was pinned-in because of the inflated slide. First Officer Erwin glanced back into the cabin and saw extreme calm. Everybody was calm; at the most, some were standing in their seat rows, but most were seated. He thought that the back door was open, but he did not know for sure. The slide at the main cabin entry door on the captain's side had not been deployed. He helped one of the flight attendants who was pinned-in her seat to get free. Now people were starting to exit the plane, and the flight attendants were doing a superb job of getting everything going. He went out the front door and jumped down onto a fire hydrant using it as a step.

According to the manual, there were some checklist items to be accomplished by the FO, but his main role in the evacuation was to assist passengers in deplaning. As First Officer Erwin came off plane, it was obvious that a large number of people, probably 20, had

come out from the SWA ramp and were helping them depl[illegible]e passengers. He assumed that they were SWA people; he remembered seeing one, Captain Jon Weaks, a captain with whom he had flown. Captain Weaks asked if he was okay, and he said that he was fine.

First Officer Erwin then went to the left rear side of the airplane and saw at least 4 people who were assisting passengers get off from that end. He then went to the other side of the airplane and saw the same thing happening. He did not think that anybody was going over the wing. He remembered another SWA captain, Robert Seltzer, and a FO came to help. Somebody said, "let's get everybody going in the same direction." On the FO's side over wing exit, there were people helping passengers to get off. It was on the captain's side over wing where the fewest people helping with the evacuation. For the most part, everything that he thought would be his duty, from catching people to huddling them together, was being taken care of by other people.

First Officer Erwin then went back on the airplane to see how the captain was doing. He believed that the captain was still on the airplane although his memory is still a little fuzzy. He still was not aware that Captain Peterson had been cut. First Officer Erwin then went outside the airplane again to make sure that things were still okay outside. He said that there was some fuel dripping off of the left wing, but he did not perceive it to be a large problematic leak.

By this time, Captain Peterson came to the door and this was the first time First Officer Erwin noticed that Captain Peterson was bloody. First Officer Erwin was concerned about the Captain Peterson going into shock. He went back into the cockpit, got his jacket, and took it back to him. For the most part, First Officer Erwin stayed with Captain Peterson on the curb next to the gas station. Captain Weaks seemed to have a better grip of what was going on than he did. First Officer Erwin did not know what he did after that. He just stayed with Captain Peterson. Captain Weaks was making phone calls and getting other people to do what needed to be done. Captain Weaks told them to sit there, that there was an ambulance coming. First Officer Erwin didn't remember seeing crash trucks. He believed that the evacuation proceeded according company regulations.

First Officer Erwin said that he helped a couple of people off of the wing at the very end.

First Officer Erwin said that he felt no undue pressure from the company to complete the mission. He said that he did not have to fill out a form if he performed a go-around.

First Officer Erwin said that he did not get training in a simulator on tailwind scenarios, and he did not get simulator training that he could remember for landing on short runways,

There were some procedures, such as using the OPC, that aid pilots to make the approach. Flight crews were not required to use the OPC for every landing, but they were required

to use it for every take off. First Officer Erwin said that he used the OPC a saw fit or as directed by the captain.

First Officer Erwin said that there was no specific training for "slam dunk" approach, when the airplane was required to come in high to the airport.

First Officer Erwin stated that, according to company procedures, most go-arounds occurred in IMC (when you cannot see the field) and the airplane was either one dot above or below on ILS, or it was not in position to land. He said that the captain was the one who directed the go-around. He said that no go-around report was required.

First Officer Erwin said that not all the checklists were completed on this flight. Captain Peterson called for the final/descent checklist at a time when the First Officer Erwin had started a radio call to ATC to confirm the landing clearance; he did not get back to the captain. That was the only item First Officer Erwin believed was not completed. When they got the first ATIS, he and Captain Peterson talked about it, but it was not an official briefing because it was VMC. According to the ATIS, BUR was using two runways. There was a discussion on whether they could even land on 26, and neither one of them wanted to do that; they wanted 33. First Officer Erwin looked at the airport 10-7 page to see if there was guidance. He could not find anything on the airport 10-7 page that prevented them from landing on 26. He did not use the OPC for landing. The next ATIS, PAPA, came on and the winds were "significantly different;" the first set of clouds was no longer mentioned; a slight temp difference, and the runways in use were now 8 and 15. First Officer Erwin said that the weather was VMC so that meant that they would conduct a visual approach to runway 8 with an ILS back up. He said that he did not use the OPC for runway 8.

First Officer Erwin did not hear ATC ask the captain to keep speed up because he was listening to the ATIS on another frequency. When he got back on the ATC frequency, the captain told him about the speed restriction. The captain made no additional comments about speed that he could remember. This did not seem unusual to First Officer Erwin; he just assumed that ATC was trying to sequence them with traffic. This situation had happened before where approach told them to keep their speed up.

First Officer Erwin thought that he first remembered the captain slowing the airplane as it intercepted the final approach course. He believed that the captain used his speed brake. At this point, the airplane was turning from a southerly to an easterly heading although he did not notice exactly when the captain started to slow down. The captain also lowered flaps. Then, when the captain recognized that the airplane was high, he lowered the gear. First Officer Erwin did not remember what the captain said, but he recognized that the captain saw what he saw: that they were high. First Officer Erwin did not remember what he said, but the Captain Peterson made some comment that led him to believe that the captain recognized the situation.

At that point First Officer Erwin noticed that the airplane was a lot closer to the airp than he had anticipated. The runway was lower in the windshield than he had anticipated. He did not verbalize any concern to the captain.

First Officer Erwin said that his navigation radio was set to Van Nuys and the captain's radio was set to the Burbank runway 8 ILS. Captain Peterson had the autopilot on and the VOR/LOC mode selected. First Officer Erwin believed that they were going to overshoot, but the VOR/LOC mode captured and corrected. He did not recall when the captain turned it off. At this point, First Officer Erwin thought that the approach was going to take some maneuvering because they were not on glide slope. First Officer Erwin was concerned; he recognized that it was not a "picture book" approach, but he was not overly concerned. He did not say anything to the captain because every time he was about to say something, he could see that the captain was correcting. There was not a time when the captain didn't seem aware of the situation.

First Officer Erwin termed the approach as "close", but he never thought that it reached the point requiring him to call "go-around." He looked down to progress page to check, but his attention was redirected outside. He glanced down but did not see it. He believed that the airplane had groundspeed readout, but he did not remember what it was reading.

Although this was his first trip with Captain Peterson, First Officer Erwin said that the captain did not intimidate him. First Officer Erwin didn't recall leaving 3,000 feet. He saw the VOR needle swing past 9:00, and he was about to say something to the captain about getting down when the captain started down. He thought that the captain called for the gear as he started down. He believed that they had 5 flaps. The call for gear down—flaps 15 all happened very fast. After that, the captain said either 25 or 30 flaps. Captain Peterson then called for 40 flaps. First Officer Erwin believed that he saw flaps 15 verified on the gauges, but he did not know if flaps ever reached 40 degrees. He did not make a comment but pointed to air speed indicator, and Captain Peterson said that he was aware of the airspeed. At this time the airspeed was roughly 180 knots.

About the time when Captain Peterson called for flaps 30, they started to get the GPWS because the captain was flying a steeper than normal descent to try to get down. First Officer Erwin did not recall the specific warning. In simulator sessions, he had had GPWS warnings before. He said when flight crews received GPWS warnings in the simulator or in IMC; standard procedures generally required them to go around. If flight crews received "TERRAIN, TERRAIN," they had to go around, and if they received a "GLIDE SLOPE" warning, they had to go around. This was the way that SWA trained the flight crews to respond to these warnings.

First Officer Erwin said that he didn't normally have nuisance GPWS warnings flying into BUR. However, he said that he did have them when he flew into SAN because the airplane had to fly over and clear a parking garage and then immediately descend toward the runway.

First Officer Erwin remembered that their airspeed was about 180 knots at one point, and he saw it go as high as 190 knots when he pointed to the airspeed. He did not notice it again before touchdown. He did not recall leaving 1,000 feet, and he did not recall making any callouts. The company required a callout at 1,000 feet by both of them. First Officer Erwin said that throughout the whole approach, his attention was primarily outside. In his judgment, that was what needed his attention, and that was where the priority was. He did not call out airspeed deviations to the captain. First Officer Erwin knew that Captain Peterson was aware the airspeed based on observing the captain's actions rather than by hearing what the captain said. He did not remember what the captain had said.

First Officer Erwin did not recall leaving 500 feet. Although company procedures required the FO to call out every 100 feet down to 100, from 500 down, he did not make these callouts. He focused his attention outside. Looking outside he saw corrections and was able to watch the aircraft ahead, which they were gaining on. He did not remember whether ATC had cleared them to land, and he wanted to make sure that he had landing clearance. He used a boom mike so he did not have to look inside in order to use it.

First Officer Erwin said that the approach never looked "unmanageable," although it did appear to be "out of the slot." He did not mention this to the captain because the captain was correcting back to the slot. There was no discussion of using another runway at that time. He did not remember any discussion after turning to final. First Officer Erwin said being in the slot meat that the airplane was on airspeed, glide slope, and was in a position to land.

He said that he had a perception that the aircraft was fast. Although they were not fast with regard to the airspeed airspeed-wise, the tailwind was pushing them closer. When the Captain Peterson called for flaps 30, he looked at the airspeed and knew they were fast.

Neither the deck angle nor the attitude at touchdown looked unusual to First Officer Erwin. When he was asked how the B-737 flares, he reported that it does not flare like a T-38. He was not specifically aware of a tailwind on this approach. He did not know what the winds were at altitude. He wasn't sure why the picture looked the way it did. He didn't register the information on the progress page. He didn't remember whether the tower reported the winds to him.

First Officer Erwin said that the captain gave him an initial briefing when they first met saying that he liked company procedures. He said, "I don't do things dumb, dangerous, different, and if you see anything, speak up."

When he got back on the frequency from getting the ATIS information, Captain Peterson told him that ATC had told him to maintain 220 or greater. He stated that, procedurally, the PNF doesn't make a call out if the PF is making a correction. In IOE training, pilots were taught that the fastest way to bring the airplane down was to get the aircraft

"completely dirty," then go down. In this case, it did not appear that this would work because they would not make the airport.

First Officer Erwin said that he noticed that the airspeed was about 200 knots when the captain called for flaps 15. Although the airspeed was 5 knots over flaps 15 speed, First Officer Erwin said that he went ahead and extended the flaps. The captain called for gear and flaps at the same time, so the he assumed that the speed would come down. First Officer Erwin said that the book called for a go around if you are not in the slot. Because of the way they were being pushed, he thought Captain Peterson's maneuver to get down was the best.

First Officer Erwin had been with SWA 3 ½ years. First Officer Erwin had seen approaches like this where the airplane had to get down or was a little high for some reason but not to this degree. He had seen approaches out of the slot where the captain did not make a go around. He had seen aircraft out of parameters at 1,000 feet, but it was hard for him to determine whether those situations were as far out of parameters as this one was because he was looking outside. First Officer Erwin said that he had not had anyone ask for flaps 40 when they were at 180 knots. He has had 40 flaps requested at 150 but not 180.

First Officer Erwin said that when he went into Reno some time ago and had thought the flight could maintain VMC; the GPWS activated and they took corrective action. He said that if a pilot wasn't aware of where he was, he had to go around if GPWS went off. For a GPWS warning; such as, "SINK RATE", going around would depend on whether the weather was VMC.

He had flown into BUR before, in January, it was at least once every trip, but he could not give an exact count.

First Officer Erwin did not remember any specifics in CRM training about questioning the PIC. He said that the main goal of CRM was to work as a team; they all contributed to a goal. He did not remember CRM training dealing with disagreement.

First Officer Erwin said that he was never scared by what he was seeing on the approach. During the first portion of approach, the lighting with the sun and ground lights made it difficult to see the company traffic ahead of him. The streetlights were becoming prominent. The traffic ahead continued to be the primary concern until company traffic pulled off the runway. At this point they were just about ready to land. The captain had maneuvered the aircraft in a way that, altitude-wise, they were in very good shape to land.

First Officer Erwin stated that he had no personal parameters for making go-arounds. To make go-around decision, the pilot must have a picture of being "pretty high." In terms of his priority of importance, he considered being lined up and being at a reasonable altitude.

About halfway down the runway, First Officer Erwin saw that they were having difficulty stopping. He didn't know the point at which he could tell that they were in difficulty. They were 2 hours late leaving LAS, but he never felt rushed. He was not uncomfortable, but when the airplane passed Van Nuys, he was concerned because things were happening faster than he anticipated. First Officer Erwin said that he had never been uncomfortable before. He said that he had been on flights where they landed unspooled. (Group consensus was that the meaning of the word "unspooled" was idle power)

He had never taken an aircraft from a captain nor had he ever considered it. He did not consider doing this during the accident flight except for when he pushed the brakes.

In CRM, he was trained to handle situations when another crewmember was not following SOPs. He knew that he had been trained for it, but he could not remember when he was trained or describe the specifics. He stated that he should have told the captain that they were not in a position to land.

First Officer Erwin thought that the approach appeared to be manageable. The captain was correcting, and the corrections seemed to be working. He thought that the Captain could salvage the approach.

He had not thought about the airspeed when he lowered the flaps. He did not remember being bothered by it. When the captain asked for flaps 30, First Officer Erwin pointed to the airspeed gauge. The captain said that he was aware of the speed. First Officer Erwin thought they would get down, bleed off the excess speed, and execute the approach.

First Officer Erwin reported that he had conducted 5 to 10 go-arounds; all of them were ATC directed. He thought Captain Peterson was very good and professional. Although the flight was very short, First Officer Erwin said that he was impressed by the way they had discussed things.

When First Officer Erwin was asked about his expectations when ATC told them to maintain 220 knots, he said that, generally, ATC told you to resume normal speed or the told you to slow down. On the accident flight, he did not believe that ATC told him to resume normal speed. He said that when ATC didn't call and ask them to resume normal speed, they should have asked. He believed that ATC needed them to maintain 220 for sequencing and did not consider it unusual. He thought that the captain agreed because he did not question it.

First Officer Erwin reported that SWA philosophy was that the captain was in charge.

First Officer Erwin did not remember if the ground spoilers (speed brakes) deployed. He said that when the airplane was on final, if not before, the pilot checked that the speed brakes were armed. The captain physically armed them, and the PNF read the checklist. First Officer Erwin knew that the captain armed them because he counted 5 green lights, (3 gear, wing flaps and speed brake arm). He believed that the ground spoilers came out

because he saw the handle come back. He said that SWA procedures were to manually deploy the ground spoilers if they didn't deploy automatically.

He believed that during the approach into BUR they were getting 6 knots of wind with a right quarterly head wind on landing. Had it been a tailwind, the briefing would still have been the same.

First Officer Erwin said that he had completed 12 years of active duty in the USAF. SWA was his first choice of airlines. He had worked full time in the reserves and intermingled with a number of DL, UA, and AA guys. He did a year at Luke Air Force Base, Phoenix, Arizona, and met a number of SWA personnel; they seemed to be the happiest and most content.

He did not believe that it was the crew's option to deviate from manual.

Interview:	Captain Ken Gile, Headquarters Chief Pilot
Present:	Operations Group and Human Performance Group
Time:	0900, March 15, 2000
Location:	Southwest Airlines Flight Operations, Love Field

During the interview, Captain Gile stated the following information:

Date of birth:	[redacted]
Date of hire:	January 29, 1979
Flight experience:	USAF 1970–1976, T-38 Instructor, C–130 (Special Operations) Saudi Arabian Airlines, B-707, 1976–1978
Type rating:	B-737 (August 1978 at United Airlines)
Total flight time:	approximately 14,000 hours
Total B-737:	approximately 10,000 hours
Total PIC:	approximately 7,500 hours
Position:	SWA B-737 Captain since December 1981, SWA B-737 First Officer

Captain Gile became a check airman in January 1988, Dallas Assistant Chief Pilot in Dallas in August 1991, Dallas Chief Pilot in June 1995, and then the Head Quarters Chief Pilot in January 1999. This is equivalent to System Chief Pilot or Operations Chief Pilot

Captain Gile stated that his current duties and responsibilities included dealing with the domicile and system chief pilots for operational or personnel type issues. He explained that operational issues included changes in the airplane, electronics, dispatch, and other operational changes. He estimated that 10% to 20% of his time was spent dealing with personnel, and the rest of his time was spent with operational issues. Captain Gile said that SWA had 6 domicile chief pilots, and each had an assistant—except for PHX, which had 2 assistants. He said that he was in contact with each domicile almost every day.

Captain Gile said that he had some input into company training programs. The Director of Training and Standards was directly responsible for the training scenarios and curriculum. He occasionally observed check airman and instructors, although this was not part of his regular duties. Captain Gile said that he did line checks and conducted proficiency checks and was an FAA designee.

He stated that no report was required if a captain does a go-around, or a crew is delayed on push back. He said that he would not call a captain in to explain a delay. If anybody did that, it would be the domicile chief pilots although he was not aware that they did that. Chief pilots at the individual domiciles dealt with most personnel issues.

Captain Gile said that his relationship with the FAA as "professional." Problems with the FAA may not be resolved to his liking, but they were resolved. He said that the FAA was doing good surveillance, but they were stretched thin because of insufficient personnel. He attended quarterly check airman meetings. He and the Vice President of Flight Operations were invited to attend each meeting, and they tried to attend.

Captain Gile said that when a pilot failed a check ride, he did not get involved. It was brought to the attention of the Director of Flight Standards and Training. He stated that he was not aware of any airport in particular that had a problem with ATC bringing airplanes in with a "slam dunk" type of approach.

He was not personally familiar with the accident crew, either socially or because of problems with their performance.

When Captain Gile was asked what his intentions were with regard to the accident crew, he reported that once they reviewed all the facts, they would make a decision. It would likely be a group decision with Captain Crum, himself, the chief pilots, and Captain Willis, the head of training, as well as SWAPA. He said that the accident pilots were currently off flying status.

He defined that the "slot" meant being on glide slope, on localizer, on airspeed, being properly configured at 500 feet with the engines at a constant steady state. If he weren't in the slot by 500 feet, he would go around. A pilot would not be allowed to make corrections to get on slot at 500 feet.

Captain Gile said that he had been to BUR many times and had landed on runway 8 many times. BUR was a "special airport." The winds varied a lot because of the mountains. He did not remember approaches being predominately from any one direction. Most of his landings had been on runway 8. He did not consider BUR to be any more challenging than other airports that he had flown into. Captain Gile said that he been out to fly the line as recently as December 3 when the new Vice President took over. They had both been working a lot in the office. Once they were settled, they planed to get back to flying. Then he would fly one 3- to 4-day trip each month plus one checkride. Captain Crum planed to fly 150 to 200 hours a year.

Captain Gile reported that he had conducted pilot-initiated go-arounds at SWA: probably 5 or 6 in his career. He has also directed FOs to go around. As FO, he never directed a captain to go around. He said that he could conceive of an FO directing a captain to go around. Captain Gile said stated that at SWA, a FO would be more than welcome to say, "I think we ought to go around."

Capta. ile stated that SWA was trying to implement VASI: a self-reporting system, which includes self-disclosure to the FAA, ASAP, and the FDAP (analogous to FOQA), which means flight data analysis program. He understood that the FAA had stopped VASI because their people were not trained. SWA was ready to go, but the FAA is not.

Some of the things that Captain Gile had dealt with on the line included haircuts, hats, or flying that was not in accordance with standard procedures. His policy was to talk to the pilots privately. He had seen descent profiles and maybe a missed callout that he discussed with pilots. He had not had these discussions with either of the two accident pilots, or with any pilot more than once.

Captain Gile said that SWA's airplanes had autobrakes installed but they were not connected. SWA wanted the pilots "in the loop; it wanted them flying. A few months ago, the suggestion was made to change it. A committee of four studied its use; they test flew the airplane with autobrakes activated, and a decision was made to change. SWA was currently in the process of activating the autobrake system.

He stated that BUR was designated a special airport because of the mountains; the heavy general aviation aircraft traffic around Van Nuys, and the single engine performance considerations near the mountains. He believed that on the descent, the airplane must stay at or above 3,000 until east of Van Nuys. He had not experienced any problems because of this. He said that the Jeppesen pictorials alleviated the need for special training. No special briefing was required. Captain Gile said that there was no requirement for a special briefing or checkride. He also said that there were no special minimums or requirement for a particular pilot to fly the approach.

Captain Gile said that SWA had no requirement for crew pairings. All SWA pilots were experienced. Once they were qualified to fly the line and had completed IOE, they were considered qualified. Once a pilot completed the IOE, he flew one full month of hard line.

Captain Gile Captain Gile couldn't remember for certain whether a brand new FO was restricted from landing at BUR. After IOE, a brand new captain and brand new FO after IOE could be paired. This was because SWA considered FOs qualified.

Interview:	Captain Milt Painter, Director of Training
Present:	Operations Group and Human Performance Group
Time:	1000, March 15, 2000
Location:	Southwest Airlines Flight Operations, Love Field

During the interview, Captain Milt Painter stated the following information:

Date of birth:	[redacted]
Date of hire:	January 1978
Flight experience:	USAF, June 1971–December 1977, Pilot and Instructor Pilot, T-43 (B-737)
Type rating:	B-737 (August 1977 at United Airlines)
Total flight time:	approximately 13,500 hours
Total B-737:	approximately 12,500 hours
Total PIC:	approximately 9,000
Position:	SWA B-737 Captain since February 1981, SWA B-737 First Officer

In 1982, after being captain for a year, Captain Painter became a check airman. In 1990 he became the Director of Flight Standards. In 1991 he assumed his present position as Director of Flight Standards and Training.

Captain Painter said that he oversaw the check pilots, the training programs, and the surveillance of all of the pilots in training. He talked to all pilot classes, observed and conducted simulator sessions, and he observed line operations, to assure that everybody is doing their job. He said that he flew the line at least 150 to 200 hours a year and one 3-day trip a month as mandated by the Vice President of Flight Operations. He flew trips in December, January, and a 1-day trip in February. He is a line and standards check airman. At one time, he was qualified to do all checks, but he lost his currency last quarter.

Captain Painter said that SWA had standards check airmen and check airmen. They had 117 check pilots; which included all of the chief pilots and their assistants. Out of that 117, they had 15 check pilots who were "standards check airman," which included himself. He said that the standards check airmen oversaw the check airmen; they gave the check airmen their check rides just to make sure that their check rides were standard, and they made sure that they were conducting them correctly.

Captain Painter said that the Standards Check Airman Group was formed in 1997 or 1998. All pilots who had made check airmen had top-level integrity; they had to be well respected by their peer group; they had to be able to communicate well, and they had to be outstanding pilots. He said that the chief pilots submitted recommendations for check airmen; then he and the Vice President of Flight Operations made the selections. The check airmen then completed a week of ground school, a week of simulator training, and then they flew four legs with a check pilot in the left seat.

Captain Painter said that SWA originally selected 14 pilots, with representatives from each base to be "standards check airman." They were the "cream of the crop;" the very best pilots they could find. They met a couple times a year; generally in conjunction with the check pilots; at least one meeting in Dallas; the rest in domiciles. They discussed a variety of topics; this event will be at the top of the list. They discussed solutions for operational problems. He said that they also discussed CRM. At the meeting, they brought in their CRM instructors to talk about CRM training for 2000.

SWA hoped that all their pilots would be exposed to CRM daily. They conducted new-hire CRM training, with operations agents, dispatchers, at least two mechanics, and flight attendants. He said that was Bill Taggart, who was from University of Texas, always conducted the new-hire CRM class. Captain Painter reported that he was chairman of the CRM committee in 1988; he went to every airline in the industry to see what was done. In 1989 SWA implemented a 2-day program for all pilots.

Captain Painter said that today, new-hire pilots received CRM training; then they attended recurrent CRM every year in a 2-hour block. At captain upgrade, they received a 1-day CRM class that covered errors in air management, leadership, and using resources. This training was more of an operational program than a theory program. The new-hire program was now a 1-day program (it was two days when first implemented). Moreover, everybody here received CRM before joining SWA in military or civilian training. Captain Painter said that SWA wanted CRM to be a way of life in their operations. They even tried to avoid mentioning the word "CRM" in their recurrent training.

The CRM training employed video reenactments of events that occurred at SWA. They had the crews involved talk about what they did and discuss their mistakes. The class viewed a video of the scenarios with voice-overs by the pilots involved; then it discussed the events. There was a limited group of instructors who taught the CRM classes.

Captain Painter said that SWA had no formal module in their training for tailwind landings. They stressed visual landings with the new hires because 98% of their landings were in visual conditions. He knew that his instructors covered this in the simulator. While it was not a specific module, he knew that it was covered in simulator training.

Captain Painter said that SWA considered a 6,000-foot runway to be a "short" runway. Company procedures stressed landing in the touchdown zone, regardless of the length of the runway. They stressed braking at 80 knots and reverse thrust, using both with the

minimum applications of each, if possible. Captain Painter said that there was no sp[illegible] training module. For a number of reasons, which included tailwinds and short runways, they recommend that pilots use flaps 40 and consult the OPC. Captain Painter said that Pilots had to use the OPC when their landing climb performance was in question or when they were at a heavy weight, high altitude situation.

Captain Painter said that no changes had been made to pilot training as a result of the Burbank accident. He said that SWA was already emphasizing some of the things in training; such as, OPC use, recognizing tailwind conditions, and re-evaluation of the dispatch release. If the investigation showed that there were areas that they could improve, they would be corrected.

Captain Painter said that he would be involved with the pilots if they came back for retraining.

Captain Painter said that when a pilot failed a check ride, he talked to the pilot, the check airmen, and the FAA. They took a look at the line, and always gave the individual a PT in the simulator with one of their instructor pilots while emphasizing the areas of need. They then gave him a full 4-hour training block in the simulator. On the other hand, if the pilot had shortcomings in systems knowledge, they would give them ground school. They gave the pilots another checkride when they were ready. Captain Painter said that the pilots almost always did well after the PT and additional instruction. He said that some pilots just stumbled on occasion.

Captain Painter said that, last year one pilot who had upgraded to captain failed 3 checkrides and was terminated. He received medical help; was rehired as first officer for 6 months, and is now in the captain upgrade program.

Last year SWA conducted 447 new-hire proficiency checks, of which 6 were unsatisfactory. They gave 2,045 recurrent PCs (15 failures), 220 captain upgrades PCs (2 failures), and 220 LOFTS (6 failures). They had one failure on a line check: the captain's publications were out of date. They had 447 IOE's with one failure; and the pilot was terminated.

Captain Painter said that SWA has 26–28 professional instructors. Initially, the training was contracted to AMR training corp. When they built their own training facility, they hired AMR's instructor cadre, bought their B-737-200 simulator, and bought a new B-737-300 simulator. SWA liked those instructors and their product, their personalities, and the knowledge they had of the machine. SWA kept that system, because line captains were expensive. Captain Painter said that having them training on full time made them very good simulator instructors. This system provided continuity. Simulator instructors had a requirement that they ride the jumpseat at least once a quarter.

Captain Painter said that line familiarization was taught by line FOs (1 day) who spent a day in ground school training the new-hires. Operational training was taught by check airmen (3 days). CPTs were taught by instructors and first officers.

He said that SWA uses a "lance" captain program. As long as the weather is better than 1,000 feet and 3 miles, they can fly as captains with a captain in the right seat.

Captain Painter said that the FAA was welcome at check airman meetings. The use of the OPC and HUD was suggested but not required for landing. He said that SWA had not changed this as a result of the accident, but it would be looking at it. When SWA made changes, it needed good reasons, and then it had to formulate good solid procedures; otherwise the procedures won't be followe . SWA looked at situations when the OPC was needed; for example, when operating at ABQ on a hot day with a max quick turn there was need to check those things. He personally thought that the OPC should be consulted for every landing. However, he said that there was no need to use it for going into LAX or LAS at a medium weight.

Captain Painter said that SWA put the HUDs in the airplane for a number of reasons, but it was put there primarily for low visibility landings. SWA thought it would take them to CAT IIIA quicker, and it fit well into their operations. However, HUDs also brought many things with it. Like the auto-throttle, it could sometimes be more cumbersome than it was helpful. SWA's procedures allowed for personal preference in its use. Nevertheless, the HUD had a 3-degree glide path, and this could be a real help at night when flying into airports without VASIs. Maybe this accident was the opportunity that would allow SWA to address those issues. According to what he knew, SWA had solid procedures in place that were not followed in this particular instance.

Captain Painter said that based on the FOM/FRM, the accident crew should have used the OPC. The verbiage in the FOM/FRM is that "we recommend you use the OPC in these conditions..." so maybe SWA should change it to "required in these conditions." The landing speeds were obtained from the FMC.

Captain Painter said that he did not believe there was undue workload resulting from the change across airplane models during a trip. The OPC standardized the performance of 4 airplane models. He said that all procedures and call-outs were blended in the FOM. A lot of time and money went into making the airplane standard within the fleet. QRHs were changed so that they all read the same. He said that the B-737-300 was their basic airplane. Other models were described in a "differences" handout.

Captain Painter said that conflict resolution was covered in CRM training. He said that a conflict could happen in a number of stages: between pilots, between crews and in dealing with conflicts with passengers. CRM was started in 1989 and management supported it 100% and never questioned the money spent on it. Mr. Kelleher and some other executives had attended the training. Mr. Wimberly wanted to put all 22,000 operational employees through a program on a recurrent basis.

After the NTSB crew interview, a company management team interviewed the flight crew. It became apparent that solid company procedures had not been followed. The crew missed checklists; they missed the 1000-foot call with no verification of that call. There was no deviation called out; no reference to GPWS and glide slope, and no 500, 400, 300, 200, 100, 50, 30, 10 call-outs. Captain Painter said that he was dumbfounded that two professional pilots would allow that to happen. The captain did not have the aircraft configured; he was not in the slot, and the FO's callouts would have helped tremendously. He said that SWA pilots were trained in making deviation call-outs.

Captain Painter was not familiar with CRM scenarios presently used that might be like this accident. They did have one scenario where most pilots came to the conclusion that the approach should have been aborted, but that situation was in IMC, and this approach was more stabilized than in the BUR accident.

As a FO, Captain Painter said that he had made go-around calls when he thought a captain was not doing something correctly. CRM has helped. Captain Painter said that when the captain didn't do it, he had to take over. Safety was the name of the game. Captain Painter said that he took over from a captain while they were landing in Lubbock. The VASI lights were red over red. He called it out, but the captain didn't correct. They were probably at 1,500 to 1,000 [feet] when he said, "I've got the airplane." They discussed it on the ground. Captain Painter said that he talked to Captain Don Ogden about the event. He didn't know what happened to the captain, but nothing happened to him.

Captain Painter said that if the same thing happened today, he would expect a FO to do the same. He said that nothing would happen to the FO, but he was sure that the FO would talk to the chief pilot. In his position, he can remember one FO initiated abort. He could not recall hearing about any since he assumed his current position.

He stated that the SWA quick turnaround culture had nothing to do with this accident; quick turns happen on the ground. Captain Painter said that they had all been late. If there was pressure, it was self-induced. No one had called him in for being late; he had not called anyone in for being late. He remembered going around in Dallas. He went in and asked the chief pilot whether he wanted a report; and the chief pilot said "No."

He stated that he thought that pilots were sometimes too accommodating with ATC. They wanted to make the system work, although he was not sure whether that happened during this accident. Pilots had to realize, and SWA stressed to them, that they are flying the airplane. This crew was at 3,000 feet, 230 knots or greater, before it was cleared for visual. At that point, the choices were to slow the airplane down and fly the approach, tell ATC that he cannot comply, or ask for a 360, another vector, etc. Captain Painter said that the pilots fly the airplanes, and ATC has a plan. If pilots cannot fit the plan, they shouldn't try. The accident captain didn't have to turn to the runway. Captain Painter said that SWA was going to stress that in future training. Captain Painter said that that

was part of leadership, part of being a pilot. He didn't see anything abnormal about ATC'S handling of this event. He said that part of SWA's training curriculum had check airmen talking about the operational side of flying. He said that CRM training dealt with making decisions on whether to continue or not. Pilots would get this in their initial training and captain upgrade CRM training, and in recurrent CRM training. In recurrent CRM training, they talked about approaches and rushed approaches. One of the events they talked about this year was a crew incident that occurred in Fort Lauderdale.

Captain Painter said that recurrent CRM was taught by emergency procedures training instructors, who had been trained by Taggart. Recurrent CRM was revised every year. All pilots attended, with a mix of captains and FOs.

In new-hire CRM training, the main objective was to make pilots realize that they were part of the team, and they needed to use all of the resources available to make decisions. SWA stressed that the most important resource was the other pilot. Because it was part of their job, FOs had the right to speak up when they didn't like something, agree with something, or were uncomfortable. Pilots were supposed to work together. They didn't have to like each other, but they did need to work together as professionals.

Captain Painter said that CRM instruction for captain upgrade was basically the same but with more emphasis placed on leadership. SWA wanted them to use the FOs. A cockpit was not a democracy: someone had to be in charge. Everyone had a say, but the PIC made the final decision.

Captain Painter said that the company wanted CRM trained throughout, and it was stated in the manual that way.

SWA examined the Advanced Qualification Program (AQP) option and decided not to adopt it. Captain Painter said that most airlines were going use it because it was cheaper. SWA did not like once-a-year training. The company was happy with their training program and believed that they produced a good product. Most of the airlines that went to AQP were not as excited about it as they originally were. Some were going to 9 months PCs, and some were going back to every 6 months. Some were going to back to fundamental event training.

SWA was proud of their standardization. Mr. Kelleher asked Captain Painter what he was thinking after the accident. He said that he was sad and dumbfounded, but he would use this as an opportunity to look at their weaknesses. SWA needed to do a better job in training for the visual approach phases of operations. He said that everything was there, but he thought they needed to emphasize it more.

Interview:	Captain Jerry Kersey
Represented by:	Bill Robinson, Attorney
Time:	1630, March 9, 2000
Location:	Mercury Air Center, Burbank, CA

During the interview, Captain Jerry Kersey stated the following information:

Date of birth:	[redacted]
Date of hire:	January 1, 1994
Flight experience:	HorizonAir, 1985–1990; Pilot/Check Airman, Metroliner, Dash-8 AirWest, 1990–1991, FO B-737 AirMark, 1991–1993, Captain B-737 Morris Air, 1993–1994 (merged with SWA)
Type rating:	B-737 (Flight Training International in Denver, CO)
Total flight time:	approximately14, 000 hours
Total B-737:	approximately 5,000 hours
Total B–737 PIC:	approximately 1,000
Position:	SWA Captain since December 1998, SWA First Officer

Capt. Kersey said that he had flown with FO Erwin one time on a pairing that originated on February 13, 2000. He said that the trip departed Oakland (OAK) and flew through Burbank (BUR), Sacramento (SMF), San Diego (SAN), Las Vegas (LAS), terminating in San Antonio (SAT). They flew about 6 hours, 42 minutes that first day. He said that he flew the first leg into BUR because he liked the challenge of landing in BUR. He also mentioned that it was company policy because BUR was a "special airport." New FOs with less than 100 hours cannot make landings or takeoffs at special airports. On the second day, they departed SAT to LAS, OAK, SAN, LAS, and terminated in ABQ with about 7 hours, 50 minutes of actual flying time. On the third day, they departed ABQ to ELP, PHX, SAN, and terminated in OAK with about 4 hours, 26 minutes actual flying time.

Capt. Kersey did not observe First Officer Erwin make any instrument approaches during the 3-day trip. He said that on his approach to BUR, he had used the HUD unit not because of the weather, but because of the information displayed by the unit, especially the wind information. He said that he used the VMC mode of the HUD when making visual approaches to provide glide slope information. He stated that, "The HUD makes a pilot a better pilot."

When he was asked to provide any comments about the accident FO, Captain Kersey stated that he could not remember him very well; he only remembered FOs that scared of irritated him. He explained that he flew vacation replacement lines and flew with numerous FOs each month. He recalled that the accident FO had been knowledgeable, personable, and professional. He described the accident FO as being upward to an "8" on a scale of 1-10, with 1 being unacceptable and 10 being the best FO at Southwest. Captain Kersey described First Officer Erwin as being "very competent." He stated that First Officer Erwin flew "pretty much like I flew; he didn't push the airplane and he was very conservative."

Captain Kersey mentioned that while First Officer Erwin was flying into SAN, they were high on the downwind leg and slowed to 170 knots. First Officer Erwin recognized that they were high and asked to put the gear down. Captain Kersey agreed with him and told him that it was a good idea. He felt that First Officer Erwin displayed good situational awareness.

He stated that company policy dictated that seat belts were always worn. Shoulder harnesses were worn until they were clear of the runway on landing or after the flaps came up after takeoff. He said that the shoulder harnesses were reattached at FL180 as part of the approach/descent checklist. He said that he had always seen this policy adhered to.

Capt Kersey said that it was the captain's duty to arm the speed brake. The non-flying pilot challenges with "speed brake" on the final/descent checklist and the flying pilot responds, "armed, green light." There is no callout if it does or does not deploy—just reach up and pull it back. He said that he had never experienced the speed brake not deploying.

He said that a stabilized approach meant being 1,000 feet fully configured. He said that it also meant that the airplane was at 500 feet with the engines spooled.

Captain Kersey said that if glide slope/localizer was displaced 1-dot off center from or the airspeed was + 10 knots/-5 knots from the target speed, you could expect a callout if the airplane was below 1,000 feet. A go-around was required if the airplane was not in parameters at 500 feet.

Captain Kersey said that he had performed 2 pilot-initiated go-arounds, but he had not made any more since he became captain. In both go-around cases, he had been behind and made a decision before reaching 1,000 feet. He stated that both decisions were a consensus between the captain and FO. He reported that pilots were not required to make a go-around report. He said that he had never been criticized for making a go-around.

He stated that SWA pilots were not paid for cutting schedule; they were paid if they fly over their schedule.

Captain Kersey stated that sometimes FOs helped captains do a better job. When he was asked what he would expect an FO to do if he were out of parameters, Captain Kersey responded that he would expect them to say, "Go around." He stated that if the FO didn't make a required deviation call, he would call them himself to jog their memory.

He stated he had never gone to Professional Standards.

Interview:	Captain Robert Seltzer
Represented by:	William L. Robinson
Present:	Operations Group
Time:	1745, March 9, 2000
Location:	Mercury Air Center

During the interview, Captain Robert Seltzer stated the following information:

Date of birth:	[redacted]
Date of hire SWA:	May 13, 1993
Flight experience:	1992–1993, Flew night freight, Lear Jets and twin piston airplanes
Type rating:	B-737 (Jet Tech in Phoenix, AZ)
Total flight time:	approximately 13,000 hours
Total B-737:	approximately 5,500–6,000 hours
Total PIC B–737:	approximately 1,600 hours
Position:	SWA Captain since February 1998, SWA First Officer

Captain Seltzer reported that he first became aware of SWA Flight 1455 as he was clearing the runway following landing. ATC asked them to "expedite for company traffic 1-mile final." As he turned into the gate, he saw the company traffic and noted that they appeared to be approximately 1 mile out. His FO asked him, "Are they going to stop?" Captain Seltzer looked out his window and saw the nose and fuselage of 1455. He noted that the airplane was moving "fairly quickly." He wondered to himself where they were going. He stated that their speed was "unusual for that part of the runway." As he turned, he saw the aircraft impact the blast fence at the end of the runway. The fence disintegrated and there were "fireballs" out of both engines. Captain Seltzer was worried that the plane might explode; it hadn't even stopped moving yet. He saw dust and smoke coming from the area of the accident site. He got out of his seat quickly to assist with the evacuation. He left the main cabin and used the airstairs to exit. He ordered the flight attendants to keep the passengers on the airplane to prevent anyone from injury. He got on an airport tug and headed toward the disabled aircraft; he estimated that it took between 1 and 1½ minutes to arrive at the accident site. He stated that the evacuation had just begun when he arrived.

Captain Seltzer said that the aft slide was already deployed, and was at about a 45-degree angle, touching the ground. He headed behind the right wing and directed passengers to the rear wing. He reported that the flight attendants did a great job, and it was a "textbook evacuation:" timely and efficient. Captain Seltzer directed the passengers to begin walking down the street and away from the aircraft. He saw lights in the cabin and

thought that t[illegible]wer was still ON. He noted large fuel spills around the aircraft and was worried about wires arcing and a possible fire. Captain Seltzer said that he noted that the jumpseat had fallen down. As he entered the cabin, he saw that the cockpit door was closed and the blowout panel was knocked out. He observed that the emergency exit lighting was ON. He thought that the floor lighting was ON, but he was not sure. He grabbed a flashlight from the forward bulkhead and went through the cabin looking for any remaining passengers. He looked in the aft lavatory and started back to the front of the plane. Captain Seltzer said that he sat in the captain's seat and noted that the APU was OFF. He ensured that the evacuation checklist was complete and the fire handles had been pulled. The Standby Power was in the "battery position" and the battery was OFF. He moved the Standby Power switch to OFF and the lights went out. He kicked the cockpit door open to get out and noted that the slide had deflated. He observed that Captain Peterson was sitting on the street curb in front of the gas station. A paramedic was examining Captain Peterson's head, which seemed to be bleeding profusely. Captain Peterson then went into the ambulance. FO Erwin was also there, standing at the curb. Captain Seltzer noted that both Captain Peterson and FO Erwin seemed dazed and shell-shocked.

Captain Seltzer reported that on his flight, the FO was flying the plane. He stated that PIRUE Intersection was their initial point of descent. He recalled that when he first obtained the landing ATIS information, the winds were reported to be from 260 degrees at 18 knots gusting to 26 knots. He stated that because of the winds, they planned to land on Burbank runway 26, which was a rare event. He was concerned about the combination of the darkness with the terrain. About 25 miles from the airport, Approach Control contacted them with new ATIS information: the controller informed them that the winds had changed to 260 degrees at 6 knots. Captain Seltzer said that he repeated the wind information and remarked to the controller, "That was a big change!" He pulled out the OPC and entered the data for a 6-knot tail wind. He explained that he preferred to deal with a small tailwind than deal with terrain around the airport. They received vectors to intercept the ILS. At this point, they had the field in sight and elected to do a visual approach to runway 8. He recalled that as they crossed over Van Nuys at 3,000', the weather conditions were unremarkable: there was no convective activity; the skies were gray, and there were broken cloud layers. He had no difficulty seeing Burbank. There was no mention of rain in the local area. He reset the target speed over Van Nuys to their standard tailwind target speed, plus 5 knots. Approximately 3 to 4 miles prior to reaching Van Nuys, they had an indication of a tailwind from "Progress Page 3" (CDU); they had an approximate 20-knot tailwind while they were at 3,000', which didn't concern him. Captain Seltzer kept Page 3 displayed all the way down. At 1,200 to 1,300', the tailwind decreased to 15 knots or so. At 800', the tailwind had decreased to 9 or 10 knots. At 300', the tailwind had decreased to about 7 knots. They touched down at about the 1,500-foot mark, got the thrust reversers out, and applied the brakes. He felt that deceleration and braking was "normal". He reported that he did not use the HUD for landing on runway 8, but he had planned on using it for landing on runway 26 because there was no ILS for that runway.

He stated that SWA pol. . dictated that the captain always armed the speed brakes. There was no call-out to arm them, but it was listed on the final checklist as a challenge/response item. He stated that a green light illuminated when the speed brakes were armed.

Captain Seltzer reported that ATC did not ask them to keep their speed up during their approach; there were no speed adjustments whatsoever. He stated that there were approximately 20 minutes of daylight left after they landed. He reported that he always employed seat belts and shoulder harnesses. He stated that he used the HUD enough to stay current.

Captain Seltzer reported that he had never been out of parameters at 500 feet and landed.

Interview:	Robert C. Hyberg, FO
Represented by:	William L. Robinson, Attorney
Present:	Operations Group
Time:	1000, March 10, 2000
Location:	Mercury Air Center

During the interview, FO Robert C. Hyberg stated the following information:

Date of birth:	[redacted]
Date of hire SWA:	December15, 1994
Flight experience:	Royal Hawaiian Air Service, 1983–1985, Twin Otter Princeville Air, 1985–1986, Twin Otter MidPacific Airlines, 1986–1987, YS-11 Aloha Airlines, 1987–1994, Captain B-737
Type rating:	B-737 (Aloha Airlines)
Total flight time:	approximately 11,500 hours
Total B-737:	approximately 8,000 hours
Total PIC B–737:	approximately 3,500 hours
Position:	SWA First Officer

First Officer Hyberg stated that his aviation background prior to Southwest was mostly in Part 135 and 121 operations. He started his commercial aviation career in 1983 flying Twin Otters for Royal Hawaiian Air Service; then he joined Princeville Air in 1985 where he also flew Twin Otters. In 1986 he joined MidPacific Airlines and flew the YS-11 until joining Aloha Airlines in 1987. While at Aloha he flew the B 737 and received his type rating on the B737 in June of 1990. He remained at Aloha until 1994 when he was hired by Southwest. The last 4 1/2 years at Aloha he flew as captain on the B 737.

He reported that he has about 11,500 hours of flying time in fixed-wing airplanes, and of that time he has about 8,000 hours in the B 737 and 3,500 hours as Pilot-in-Command of the B 737.

First Officer Hyberg recalled that he had flown with Captain Peterson for the entire month of October in 1999, and most recently had flown with him on 2 3-day trips in January 2000. He did not recall having flown into BUR with Captain Peterson during the January or October trips. He stated that he would rate Captain Peterson as being between an "8 ½ to a 9" in his flying abilities on a scale of 1 to 10, with 10 being the best. He stated that he felt that Captain Peterson used good judgment in his flying and gave the following example. While enroute in a B 737-700, they got a pressure controller "Auto Fail" light while at FL390 and a cabin pressure "bump." Captain Peterson said, "Let's go

down to a lower altitude", and they started a .ent to FL310, then further down to FL280. They discussed the problem together, read the QRH, and things seemed to be back to normal. They then discussed their current location and made plans for what to do if the problem got worse. Captain Peterson then decided to continue to Los Angeles (LAX). He stated that the weather was marginal at LAX and they performed an IFR approach there. They didn't use the HUD for that particular approach.

First Officer Hyberg was then asked about the stabilized approach procedures taught at Southwest. He demonstrated his knowledge of the company procedures, including the requirement to call out deviations during approach and landing. He said that he did not recall ever having to call out a deviation during his time flying with Captain Peterson. He said that at Southwest it was the responsibility of the captain to arm the speed brake during the checklist and reply "armed with a green light" to the challenge "speed brake". He further stated that there was no requirement to make a call-out if the speed brake did deploy or if it did not deploy. When he was asked whether he had ever seen a speed brake not automatically deploy, he replied that he had seen that only once. He explained that on landing, the speed brake had not deployed, but as he reached for it, it did start to come back.

He said that he had landed at BUR "only about 4,000 times;" he considered BUR to be more challenging because of the short runway, tailwind 80% of the time, lots of "bug smashers", and SOCAL keeps you higher than normal. He stated that he used "progress page 3" to keep a check on the wind on all landings.

First Officer Hyberg stated that he had made two pilot-initiated go-arounds, one while landing on runway 15 at Burbank. He recalled that the wind was "squirrelly," and he received a "Windshear warning" and initiated a go-around at about 1,000 to 1,200 feet AGL. The other was on landing at ABQ, runway 3, with a 40- to 50-knot tailwind. He said that it was apparent that he would not make it down so he performed a 360-degree turn at 1,000 feet. He also stated that Southwest pilots were not required to make reports after doing a go-around.

Additional comments:

First Officer Hyberg stated that Captain Peterson gave him a monthly briefing when they flew together in October but not in January, because they had flown together before. He said the he had not observed any bad habits or non-standard techniques from Captain Peterson. He was surprised to learn that Captain Peterson was involved in the accident. First Officer Hyberg stated that he had no problems speaking up to captains. On one occasion, he told a captain to go around while they were coming into San Diego from the north. ATC had asked them to "keep it tight." At 2,000 feet, he told the captain, "you're really high," and the captain said, "Yeah, you're right, let's go around."

Interview:	John C. Morledge, First Officer
Represented by:	William L. Robinson, Attorney
Present:	Operations Group
Time:	1300, March 10, 2000
Location:	Mercury Air Center, Burbank, CA

During the interview, First Officer Morledge stated the following information:

Date of birth:	[redacted]
Date of hire:	December 15, 1994
Flight experience:	1987(2-3 months); Hauled freight in Navajo Chieftain Skywest Airlines, 1987–1991, Metroliner America West, 1991 (furloughed) Sierra Pacific, 1991-1992 American Airlines, 1992-1994
Private Certificate:	1979
CFI:	1980
Type Rating:	B-737 (Aug 1993 at Jet Tech in Phoenix)
Total time:	approximately 12,000 hours
737 total time:	approximately 5,000 hours
737 PIC:	1 hour
Position:	SWA First Officer

First Officer Morledge stated that he flew a 4-day trip with Captain Peterson from February 25 to 28, which consisted of 21 to 22 hours of actual flight time. He said that it was the first time they flew together. Captain Peterson gave him a standard brief, but First Officer Morledge didn't remember exactly what he covered. He also stated that they landed in Burbank once, and that Captain Peterson performed the landing after completing a visual approach to runway 8. He doesn't remember if he used the HUD on that approach, but he said that he (Captain Peterson) used it about 50% of the time during the 4-day pairing.

First Officer Morledge was asked about Captain Peterson's judgment during the 4 days, and he responded that it was a pretty routine 4-day trip with nothing unusual. He was asked if Burbank was different than other airports he flew into, and he responded, "at times" because ATC keeps you at 3,000 feet until east of Van Nuys, and there is a wall at the end of the runway. When he was asked if the runway was particularly short, First Officer Morledge responded "No". He also said Burbank was a "special" airport and as such, there were pictures in the Jeppesen that had to be reviewed prior to landing there.

First Officer Morledge said that if he rated Captain Peterson on a scale of 1 to 10, he would rate him a "9". He further stated that there were no 10s. He considered Captain Peterson an "excellent pilot." He said that SWA had a stabilized approach procedure, and he was familiar with the parameters. He also stated that at no time during this 4-day trip did he have to make any "deviation" calls for exceeding these parameters.

First Officer Morledge stated that company procedures dictated that the captain always armed the speed brakes. He stated that there was no required callout for the speed brakes deploying or not deploying on landing. He also said that he had never had them not deploy. First Officer Morledge said the approach/descent checklist was a silent checklist and the final/descent checklist was a challenge/response checklist. When he was asked about onboard performance computer (OPC), he said that he used it for all takeoffs and he personally used it for most landings during routine operations, although it was not required [on landing].

First Officer Morledge said that during his career at Southwest, he had performed one go-around for being too high while on a visual approach into Oakland. ATC asked the flight to keep their speed up, and he had kept it up too long. There was discussion with the captain as it was developing, and the captain actually made the decision to go around. First Officer Morledge said that the decision to go around was made by 500 feet. He stated that no report was required to be made to the company.

Interview:	Phil Lerum, FAA Aircarrier Inspector, Aircrew Program Manager, SWA, B-737
Present:	Operations Group
Time:	1350, March 13, 2000
Location:	Southwest Airlines Flight Operations, Love Field

Aviation Safety Inspector-Operations
Aircrew Program Manger B737
FAA-DFW-FSDO

Phil Lerum was assigned as the Aircrew Program Manager (APM) B-737 for Southwest Airlines (SWA) Dales Texas.

During the interview, Mr. Lehrum stated the following information:

Date of birth:	[redacted]
Date of hire (FAA):	September 1985
Flight experience:	USAF, 10 years, Pilot KC-135
	Owned and operated FAR-135 Air-Taxi "Aero Express"
Type Rating:	B-737 (1988), DC-9
Position:	FAA Aircarrier Inspector CIN-FSDO
	Assigned DFW-FSDO 1987
	Assigned SWA AMP 1988

Mr. Lerum stated that the SWA FAA-CMU was understaffed. He, the Principle Operations Inspector (POI), and three additional inspectors had oversight responsibility for Southwest Airlines. He mentioned that the FAA was eliminating two of those positions, and a third inspector had a bid in for a different position. SWA was a major airline with 3,000+ pilots, 300+ aircraft, and 100+ check airmen. Mr. Lerum described his responsibilities as being the technical person for flight operations. He was responsible for reviewing all flight manuals and making recommendations to the POI for final approval. He observed approximately 50 checks a year, 20 in the simulator and 30 in the aircraft. Additionally, he attended the annual check airmen's training meeting and attempts to attend quarterly check airmen meetings at the outstations.

Mr. Lerum stated that he did not have enough time to observe as many check rides or ground training, as he should. Southwest Airlines did not track the evaluation history of individual pilots, but he was notified of any unsatisfactory flight checks and followed up with the appropriate corrective action.

He presented a copy of the Chief Pilot's Newsletter (First Quarter 2000). In it there was an article that addressed Checklist Standardization. The article began with a statement, "First Officers were observed not reading from the checklist card and not verifying switch positions or the Captain's response visually." Most mistakes were observed during the approach/descent checklist and after-start checklist. SWA did not consider this to be a "trend" item.

Mr. Lerum discussed stabilized approaches and go-arounds as well as call-out parameters. He stated that SWA taught that in the B-737, "to go down, you have to slow down."

Mr. Lerum stated that he had had a good working relationship with the company. He reported that SWA didn't "roll over," but it worked well with the FAA. He believed that if he had a problem with the company, he could go to Mr. Herb Kelleher, the President /CEO of Southwest Airlines.

Mr. Lerum believed that there were no chronic problems with SWA. In his tenure as APM for SWA, he had taken certificate action against pilots. He noted that there was no required report for a missed approach.

He pointed out that a new program "Volunteer Aviation Safety Information" (VASI) that used the aircraft data recorder to gather statistical data on aircraft performance and flight profiles had been recently turned down by FAA because they were awaiting a new advisory circular. He stated that this program was agreed to by the Company and Union, as well as by the CMU. He believed that it would be very beneficial, but it was being held up for bureaucratic reasons.

Interview:	Captain Howard Peterson
Represented by:	David McCracken
Present:	Operations Group & Human Performance Group
Time:	1000, March 13, 2000
Location:	Southwest Airlines Flight Operations, Love Field

During the second interview, Captain Peterson stated the following information:

When asked whether he was wearing glasses during the [accident] approach, Captain Peterson replied that he didn't think he was. He stated that he used his glasses mostly for reading.

Captain Peterson stated that he did not feel pressure to complete a flight, maintain a schedule or do quick turns. He reported that company procedure did not require pilots to fill out reports of delays. He stated that some Captains might fill out a report for an ATC delay or problem even though it was not required. He stated that he had never had to explain a delay to the chief pilot.

Captain Peterson was asked to describe the events after the aircraft came to rest. He stated that he completed the [evacuation] checklist. First Officer Erwin had left the cockpit by this time. Captain Peterson stated that he had shut down the engines and pulled the fire handles to prevent any chance of fire. He explained that the emergency evacuation checklist was on the yoke. He stated that he read it all the way down, secured all switches. He reported that he tried to ensure that all checklist items were completed and was pretty sure he had finished it. He then called the tower to request emergency equipment and services. The tower informed him that it was already on the way and then called right back to tell him that he should be able to see the equipment.

Captain Peterson stated that Captain Jon Weaks came up to the cockpit and asked him if he were okay. Captain Peterson told him that he was all right. He stated that after completing the checklist, he got up and started to exit. He noted that the cockpit door was still closed, but the top part of the door was taken out. He observed that the emergency escape slide had inflated and was blocking the escape. He reported that he had to crawl through. He recalled that a flight attendant expressed surprise when she saw him; he attributed her surprise to the blood on his face. He entered the forward lavatory to get towels to wipe the blood from his face and dress the wound. He crawled out through the open space. He recalled that he had looked down the aisle and saw people leaving through the back. He stated that when he exited the cockpit the second time, all the passengers were off the airplane.

Captain Peterson remembered that someone had assisted him in getting through the cockpit door. He stated that the forward entry slide was twisted and looked "unusual." He didn't think that he would be able to slide down it and thought he would have to jump instead. He asked a fireman outside to catch him, which he did. The fireman caught him and he landed partly on the slide. The fireman escorted him to the curb, had him sit down, and asked if he could help him at all. Captain Peterson asked the fireman to have Captain Weaks come over. When Captain Weaks got there, Captain Peterson asked him whether the evacuation went okay, and whether the people had all been moved away from the aircraft. He recalled seeing two other pilots in the area. He also remembered that earlier, when he was still in the cockpit, someone had approached him to verify the passenger count. Captain Peterson stated that a flight attendant (FA) had asked him if she should use her knife to deflate the slide, and he had told her, "Yes."

When he was asked about company policy regarding the specific duties for a Captain in the event of an evacuation, Captain Peterson reported that the captain was required to stay with the airplane, shut everything down and make sure all passengers have exited.

He stated that the second time he went to the cabin, he didn't remember seeing any passengers; he only saw one man deflating the slide (and maybe an FA). He didn't think the man was a passenger, but maybe he was a SWA employee. He didn't remember them wearing uniforms. He stated that it was probably not an FA. Captain Peterson reported that he was the next-to-the-last person out of the aircraft. He stated that he did not personally assist any passengers. He stated that the evacuation was conducted according to company procedures.

Captain Peterson reported that the next time he saw First Officer Erwin was when he came over to check on him at the curb. He reported that First Officer Erwin asked him if he was okay. First Officer Erwin had been making sure that the passengers were evacuating safely and was checking all around the airplane.

When he was asked about company policy regarding specific duties for the FO in the event of an evacuation, Captain Peterson reported that it was more important for the FO to exit the airplane and control the passengers and get them away from the aircraft.

Captain Peterson recalled seeing Captain Seltzer at the accident site.

When Captain Peterson was asked specifically, "What went right during the evacuation?" he reported that the FAs did their job properly, getting the passengers off in a safe manner. First Officer Erwin got off the airplane and assisted the evacuation. Captain Peterson felt that he did a "pretty good job" by completing the checklist and calling for the emergency equipment. He stated that it was a good evacuation.

Captain Peterson was asked whether company pilots received any special training for downwind landings. He replied that it was "highly recommended to land flaps 40." He didn't recall if they trained for this situation in the simulators. He was asked whether

there was a procedure to check runway limitations for downwind landings; he answered, "Yes" and stated that the on-board performance computer (OPC) would provide them information on whether they should land or not land. He stated that he didn't recall whether pilots were given any specific training or guidance for when ATC brought you in high and hot.

Captain Peterson was asked whether the company had guidelines regarding a specific point at which a pilot should abandon an approach if things don't look right. He said, "Yes," that if the airplane is not set up at 1,000 feet, with flaps and gear, and on glide slope, you should go-round.

Captain Peterson affirmed that he called for all checklists during the accident flight. He stated that with regard to the final checklist, he called for "flaps 40", but their airspeed was too fast at the time. He didn't remember ever seeing them come down. He stated that he thought all items were challenged and responded to on the final/descent checklist.

Captain Peterson stated that he and the FO briefed for an approach to runway 33 or 26. They had talked first while still in Las Vegas and briefed the approach/descent checklist again while coming. He reported that they thought they would land on runway 33. He stated that he had landed on runway 33 in Burbank "maybe 10 times." Captain Peterson reported that after he received the new ATIS information, he didn't brief for the ILS because he was going to fly a visual approach. He said that he only mentioned that he thought they'd be landing on runway 8. He stated that the company didn't have requirements for a visual approach briefing like they did for an instrument approach, but basically they just discussed the winds, and he set up the ILS as a back-up. He didn't remember what he had briefed the FO, but he stated that he had tuned the ILS on his side, and wanted the FO to tune in Van Nuys (VOR) on his side to help judge the distance from the airport.

Captain Peterson reported that First Officer Erwin was obtaining the new ATIS when he [Captain Peterson] received the clearance to keep his speed up to 230 knots. When he was asked whether he had ever considered telling SOCAL Approach that he wasn't able to keep his speed up, Captain Peterson replied that he hadn't considered that because he "thought [he] could do it at the time." Captain Peterson could not recall what point he had started to slow the aircraft, but he stated that it was north of the localizer. He wasn't sure exactly how far it was from Van Nuys. He thought it was prior to being cleared for the visual approach.

He stated that he thought he received vectors to intercept as he was starting to slow. He reported that the clearance was late, and he went through the localizer. Nevertheless, the autopilot brought the airplane back on. He didn't recall his airspeed at that time, but stated that he was trying to slow down. He had the speed brakes out, flaps down, and probably had the landing gear down as well. He didn't remember the distance from Van Nuys at that point. He mentioned that the autopilot didn't turn as sharp as he would. Captain Peterson reported that the airplane was near the localizer, just inside (east) of

Van Nuys, when he clicked off the autopilot (he thinks), and started the descent from 3,000 feet. He stated that he could see Burbank Airport at that time. He thought that the DME was 1 to 1½ miles; he stated that he did a "double take," because the instruments looked like he had "gone past" Van Nuys, and he thought he was still west of the airport. He looked out behind himself and saw Van Nuys Airport.

Captain Peterson reported that he had a glideslope readout from the HSI, but he didn't refer to it during the approach. He stated that he kept "Progress Page 3" displayed during the approach. He observed that they had a 20-knot tailwind just past Van Nuys.

When he was asked how Burbank looked when he clicked off the autopilot, Captain Peterson reported that it looked "a little high," but he couldn't recall his specific altitude. He stated that the approach looked "marginal" because they were high and a little fast.

Captain Peterson was asked why he didn't perform a go-around. He responded that at the beginning, he had considered performing a 270-degree turn to land on runway 33, but he thought that he could get "into the slot", and that it would be okay. He stated that he had been thinking about it a lot since the accident.

Captain Peterson stated that when he called for "flaps 40" they were still a little fast. He remarked to First Officer Erwin, "I know they won't come down."

Captain Peterson reported that First Officer Erwin was assisting with the approach. He stated that First Officer Erwin completed the checklist and indicated that the airspeed was high for flaps 40. First Officer Erwin called to confirm their landing clearance. Captain Peterson didn't remember whether First Officer Erwin ever specifically stated that the approach looked fast/high.

Captain Peterson stated that he recalled the GPWS aural "SINK RATE" warning enunciating. He didn't recall when it started, but stated that it enunciated more than once. He reported that he also heard the aural "PULL UP" warning. He stated that SWA pilots are trained to react to the warnings. He didn't recall whether the FO commented on the warnings. Captain Peterson stated that it was not common to get GPWS alerts on approach to Burbank or any other airports. He stated that he had received a GPWS warning before when he was on an approach to Ontario Airport. He explained that at Ontario, he was brought in high and had to "dump it down." He stated that descending wasn't a problem; he just had to slow down.

Captain Peterson reported that he didn't recall his airspeed while on final approach. He stated that he remembered checking it but didn't recall the specific numbers. He didn't recall whether the flaps ever went down to 40 before landing. He remembered that at 1,000 feet, his position on the glide slope was still a little high, maybe less than 2 dots high. (He believed it was about 1 to 1½ dots high.) Captain Peterson stated that the FO was required to call out glide slope exceedances, but he didn't recall whether or not the FO had called that out during the accident flight. He stated that he believed that at 500

feet, his position on the glide slope was "less than a dot" high. He had been monitoring the CDI and had the ILS tuned in. He didn't recall his airspeed at 500 feet.

When he was asked how the airport looked at 500 feet, Captain Peterson reported that it looked "normal, on [the] centerline." He stated that he didn't remember whether First Officer Erwin had called out any airspeed deviations on final.

Captain Peterson was asked whether he was within the company parameters to land while at 1,000 feet and at 500 feet. He replied, "No," to both questions. He reported that he wasn't sure why he didn't go around. He stated that he got "fixated" on the runway. He explained that there was no good reason for it; he didn't have to land. He reported that he had always performed a go-around in the past.

He reported that he only had a 20-minute turn-around on the ground in Burbank. He reiterated that he felt no company-induced pressure to save time, especially since his flight was already 2 hours late leaving Las Vegas; it was too late to try to make up time. He reported that he doesn't get paid for cutting schedules.

Captain Peterson was asked to describe the term "in the slot." He explained that at 1,000 feet above the runway, the aircraft should have the proper flap and landing gear configuration, should be lined up with the runway, and on glideslope/localizer. He stated that at 500 feet, the aircraft should have those things, and in addition the engines should be spooled up. Captain Peterson stated that he was not "in the slot" at 500 feet because his airspeed was too high. He reported that his altitude was okay at that time. He stated that he knew his airspeed was too fast based on mostly a visual perception and outside references. He didn't remember hearing any unusual sounds.

Captain Peterson stated that he had never been required to fill out a report after performing a go-around.

Captain Peterson reported that it was normal for the company stock price to be printed on the dispatch papers. He stated that he receives stock options and always bought stock. He was not sure how much.

He stated that he lived in Las Vegas, and his hobbies were golf, tennis and snow skiing. He reported that he was single. He stated that he drank alcohol moderately. He mentioned that he had drunk alcohol since the accident but not too much.

When he was asked for his thoughts on preventing a similar accident, Captain Peterson stated that he wasn't sure. He repeated the fact that he had become "fixated on the runway", but that had never happened to him before.

Captain Peterson reported that he didn't remember whether the speed brakes had been stowed on approach. He thought that he had already been descending, with flaps greater

than 15. When he was asked why he didn't wait for "flaps 40" before descending, he stated that he "wanted to get out of the tailwind."

Captain Peterson was asked to describe the attitude of the aircraft on landing. He stated that he knew he was fast because he didn't have to pull back as much on landing. The nose of the aircraft was low. He didn't know if he had "flaps 40" on landing. Captain Peterson stated that if that FO had told him, "Let's do a go-around," he wanted to think he would have gone around. He was asked to describe his relationship with First Officer Erwin to help provide insight for why he might not have said anything during the approach. Captain Peterson explained that they had just met each other, and he got them into a bad situation; maybe First Officer Erwin wasn't sure what was going on. He stated that they got along fine.

Captain Peterson was asked if he knew of any airport where ATC had set pilots up for a "slam dunk" approach. He reported that maybe it had occurred in Dallas, but he stated that ATC would slow the airplane down, and it would be configured in time to land.

Captain Peterson was asked whether he felt that using the HUD would have helped during the approach. He stated that he didn't feel that it would have made a difference. He stated that he looked at the reverser levers after landing, then looked back outside and saw that the end of the runway was close.

Interview:	Rich P. Willis, Manager of Flight Training
Present:	Operations Group
Time:	1600, March 14, 2000
Location:	Southwest Airlines Flight Operation, Love Field

During the interview, Mr. Willis stated the following information:

Date of birth:	[redacted]
Date of hire (SWA):	January 6, 1992 (hired as a simulator instructor)
Flight experience:	USAF, 8 years active duty Braniff I and II, 21 years, Captain, B-747, B-727, A-320
Type rating:	B-737 (Flight Training International in Denver, CO), B-747, B-727, A-320
Position:	SWA Manager Flight Crew Training since February 1, 1999

Mr. Willis came to SWA January 26, 1992, as a ground and simulator instructor. His current duties included development of curriculum and administrative tasks.

Mr. Willis reported that there were 28 simulator instructors at SWA; all were professional instructors. Line pilots sometimes came in to supplement the training; line pilots helped supplement staffing. Line first officers conducted CPTs, but they didn't instruct in simulators. Simulator instructors worked on schedule according to need. The SWA instructor group had a small union, which had put certain restrictions into place. Mr. Willis stated that SWA preferred all instructors to live in Dallas, but some had homes elsewhere and commuted to the training center. They had to work 20 days a month. Work could include the simulator, ground or working on a specific project. One pilot might teach the entire 737-300 systems to the new-hires; this helped to maintain continuity, and provide "pilot" insight. He said that SWA taught the operational side more than the "nuts and bolts" side.

Mr. Willis developed the curriculum. He stated that the SWA curriculum taught using the OPC, HGS, and flaps 40 for tailwind landing. He said that there was a specific demonstration of tailwind and short runway landings in the simulator during pilot training. Mr. Willis said that the curriculum taught the pilots what was available in their books. He said that they always had demonstrations. He said that there was no specific "short runway" training in the training guidance, but it did come up in the simulator.

Mr. Willis stated that the pilots received line-oriented flight training (LOFT); he said, "This is what is going to happen to you in the real world." The new-hires received one

LOFT and new captain upgrades received 2. SWA used real time in the simulator. They set up the LOFTs ahead of time; the instructors had the leeway to incorporate any pertinent issues. Mr. Willis said that the instructor played an active role as ATC, dispatch, flight attendants, etc. SWA tried to make the LOFT training as similar to airline experience as possible. The LOFT was not oriented toward any geographic area at this time; but SWA was currently working on that issue.

Mr. Willis stated that as a result of this accident, there was no question that many things would be done to incorporate important issues. He reported that one of his most important jobs was to "listen to the line pilots" and see what training issues needed to be dealt with. All instructors were type-rated in B-737s. Ninety per cent of them had airline or military experience; some had corporate experience. Instructors were asked to stay for 3 years before they interviewed for a line position. They have 5 retired SWA captains working as instructors.

Mr. Willis stated that captain training/checking was completed every 6 months, and the first officers were trained/checked annually. When the captain received the PC, he attended systems ground school the day before. Six months later, he received proficiency training (PT); there was no ground school associated with the PT. He said that the pilots had to still demonstrate proficiency even with the PT. Mr. Willis said pilots could train to proficiency in the 4-hour block, and then they had to demonstrate proficiency before completion. First officers received a PC once a year. They alternated PC/PT every year. They also received a systems ground school each year before each event.

Mr. Willis stated that the CRM training course was developed as a joint effort with the University of Texas. Pilots received CRM during their initial training, captain upgrade, and yearly EPT. SWA implemented CRM into their simulator training, but they didn't discuss it as a specific item. He said that SWA would soon have a video CRM program incorporated into all the simulators: it would run during their entire 4-hour simulator period.

Mr. Willis stated that pilots from the Professional Standards Department approached him to discuss incorporating certain training issues. A pilot might say something that the airman assumed was company procedure; when instead, it might have been the pilot's personal technique (as opposed to a standards issue).

He stated that SWA turned out the best pilots. There was a noticeable difference.

Interview:	Tom Kersten, FAA Aviation Safety Inspector, Air Transportation Oversight System (ATOS), SWA
Present:	Operations Group
Time:	1300, March 13, 2000
Location:	Southwest Airlines Flight Operations, Love Field

During the interview, Inspector Kersten stated the following information:

According to Mr. Kersten, he was an FAA Aviation Safety Inspector assigned to "Air Transportation Oversight System" (ATOS) out of the ORD-FSDO.

Date of birth:	[redacted]
Date of hire (FAA):	October 15, 1996
Flight experience:	Certified flight instructor, 10 years
	Natural Gas Corporation, 17 years, Corporation Pilot
Type rating:	B-737 type rating (Oct. 1997 at Boeing)
Position:	Assigned Southwest Airlines ATOS since 1998

Mr. Kersten stated that he spent about 30% of his time performing surveillance on Southwest Airlines. He completed 7–8 initial operating experience (IOE) checks per month. He knew of no chronic problems with Southwest Airlines. Any problem that developed was handled quickly.

He stated that ATOS was not user-friendly for conveying problems and the Program Tracking and reporting system (PTRS) was much better. Mr. Kersten stated that he attended a 2-day ATOS familiarization course run by the FAA and SWA and a 3-day dispatch recurrency course. He stated that this qualified him to conduct line checks. He also stated that inspectors do not have to be type-rated in the B-737 to conduct line checks.

Mr. Kersten stated that his office used to get about 30 requests each month for line checks, but that had increased to closer to 70. Because of staffing (6 inspectors, 2 who cannot fly), they have had to turn down 8 out of 10 requests. They used to have a staff of 11 inspectors. Mr. Kersten said that he didn't work for Mr. Gordon Taylor (SWA POI), but that Mr. Taylor did have an input into his work program.

Mr. Kersten reported that he had not taken any certificate action against a SWA pilot. All problems had been handled with a phone call to the MDW Chief Pilot. Individual problems were handled well in this way. He didn't think that there were any systemic problems at SWA.

He reported that SWA did a good job on upg operating experience (UOE). Flying only the B-737 helped this training process.

Interview:	Gordon Taylor FAA Principal Operational Inspector
Present:	Operations Group
Time:	1400, March 13, 2000
Location:	Southwest Airlines Flight Operations, Love Field

During the interview, Mr. Taylor stated the following information:

Date of birth:	[redacted]
Date of hire (FAA):	November 1981
Flight experience:	USAF, 1972–1978 Braniff Airlines 1978–1981
Type rating:	B-737 type rating 1996 at Flight Safety International, Seattle
Position:	Air Traffic Trainer, Security, Flight Standards District Office (FSDO), Southwest Airlines (SWA) Certificate Management Unit (CMU) 6 years, Principal Operational Inspector (POI) Southwest Airlines 3 years

Mr. Taylor stated that as the SWA POI, he was very short-handed with only four assistants. He would be down to one (the Aircrew Program Manager (APM) by the end of the year (2000) if there were no replacements. This meant that they would not be able to do all the things that needed to be done. Even now, he did not get to do as much with the carrier as he should because of other obligations. As the POI, he did little surveillance of SWA. When he was asked whether he conducted many IOEs or enroutes, Mr. Taylor stated that he did mostly administrative work and has done none this year. He stated that SWA was unique in that it only had one aircraft model. Therefore, he was only allowed one APM. He was not aware of any chronic problems with the SWA.

Mr. Taylor described his relationship with the carrier as professional. He said that they shared information freely but did not socialize. SWA was very proactive and had gone the extra step to standardize check airman.

Mr. Taylor went on to say that he was extremely frustrated with FAA because of a new program that he and the company wanted to implement. The new program was named "Volunteer Aviation Safety Information" (VASI). A parallel program was in place at American Airlines. The program involved the use of the aircraft data recorder to gather statistical data on aircraft performance and flight profiles. Mr. Taylor stated that the company, the union, and the CMU were in agreement that safety would be enhanced with the use of this data. However, the FAA had been put the program on hold until a new advisory circular was issued which might take over a year.

According to Mr. Taylor, letters of investigation (LOI) had been . . to the accident pilots, and they were off flying schedule indefinitely.

Mr. Taylor was questioned about the "Air Transportation Over Sight" (ATOS) program and how many of the ATOS Inspectors were typed rated in the B-737. He replied that 3 of the 5 inspectors were type-rated. The FAA had no recurrent program; SWA donated the simulator time.

He went on to say that he thought that SWA was the most standardized airline in the industry. For example, on one of the first checkrides he observed, the flying captain called for "gear up", and in the debrief the check air nan pointed out to him that the manual said "landing gear up."