

NASA JOHNSON SPACE CENTER FACILITIES ORAL HISTORY PROJECT

ALEX S. PACZYNSKI
INTERVIEWED BY JENNIFER ROSS-NAZZAL
LAS CRUCES, NEW MEXICO – 10 AUGUST 2009

ROSS-NAZZAL: Today is August 10th, 2009. This interview with Alex Paczynski is being conducted in Las Cruces, New Mexico for the JSC Facilities Oral History Project. Jennifer Ross-Nazzal is the interviewer, assisted by Rebecca Wright. Thanks again for joining us today. We certainly appreciate it. I'd like to begin by asking you to give a brief description of your career with NASA.

PACZYNSKI: First let me tell you my education. I am an electrical engineer. I graduated from the University of Cincinnati [Ohio] in 1955, [with a] degree in electrical engineering. I also have a master's from New Mexico State University [Las Cruces], which I received in 1970, in mechanical engineering. I have a year's worth of work toward my doctorate. I did not do a dissertation, though. So I'm fairly well educated.

My career at NASA spans about 31 years. Before that, I was with Martin Marietta [Corporation] for three years, before that, with Douglas Aircraft [Company, Inc.] for six years, about 40 years of total experience in engineering. My 30-plus years with NASA include of course Apollo, which was the "biggie" as far as I'm concerned. It was an engineering effort of [enormous] effort. It just was unbelievable how engineering [was dominant] in that program.

[Space] Shuttle again was another good project. I had a good job. I was a rocket engine test [manager] for a long time at the [White Sands] Test Facility [Las Cruces, New Mexico], when [out of the blue] a fellow from Houston [Johnson Space Center] gave me a call and he said,

“The training facility for Shuttle pilot training is up for grabs if you want it.” The reason he called me is because I’d talked to him a few years earlier about maybe getting that project. He said, “NASA lost its training site on Matagorda Island [Air Force Base, Texas]. The Air Force decided to close it down.” So then they were looking for a new place to train their Shuttle pilots. They were sending a NASA pilot out to scour the Southwest. He had talked to a couple bases in Texas and got turned down. He was about to go to Holloman Air Force Base [New Mexico] the next day.

I had to decide, do I want to get involved in this project or not? I thought to myself, “If I’m smart enough, I can grow this into a Shuttle landing site” that was the entire motivation of this. I said, “I’m going to get involved. [Carpe diem (seize the day)].” So I called the pilot up, talked to him. He turned out to be a very nice man. Allen [L.] Manson was his name, Allen Manson, [was] a gentleman. He could have said, “Don’t bother me, I’m too busy, I can handle this myself, I don’t need your help,” [that would have ended this project]. But he was nice. He said, “Yes, come on out.” So I met him in Holloman Air Force Base. He went into Base Operations, and they said, “Sorry, we’re so busy we can’t do it.” I said, “Al, I got a place I’d like to show you.”

I brought him out to Northrup Strip. I somehow managed to get him on the [White Sands] Missile Range [New Mexico], which was difficult. We looked at the strip, and he said, “Well, you are a NASA person. It would be nice to have NASA here on the ground. Let me go back to Houston.” He liked the strip. He liked the idea of its remoteness. I also took him to the Air Force major, [Major Paul Smathers, who] was in charge of air traffic safety. [He made an excellent presentation.] They guard the airspace very well in Northrup Strip, the whole Missile Range, so that was a plus for NASA. They didn’t have to be bothered with other airplanes

interfering with their operations. He went back to Houston. He got permission. Said, “Yes, go ahead. You have a shot at this.” I could have failed of course, and they could have gone someplace else, [that also would have ended the project]. As it turned out I was successful.

ROSS-NAZZAL: What year was this that Manson came down?

PACZYNSKI: That was February 1976 when I received that phone call. If that phone call hadn’t have happened, there would have been no White Sands Space Harbor. [Also], STS-3, the mission that landed here, would not have been able to take off for at least a month, because they’d have had to wait till the Edwards Air Force Base [California] lake bed dried out. So they would have lost about \$12 million worth of work. It’s \$400,000 a day times 30 days. That’s what would have happened if I hadn’t gotten involved. [I saved NASA \$12 million.]

Short history of the Space Harbor—we were very successful. We built one runway. It was finished in May of 1976. It was the north-south runway. There were two more runways added, but they were added several years later, when we decided that we needed an east-west runway, and also they decided they wanted to do their abort site training, which is a smaller runway, a shorter runway. So we built a smaller and shorter runway adjacent to some of these, and they were able to do their abort training there also.

It was a great training site. The pilots really loved it. The astronauts actually wanted Northrup Strip to become a Shuttle landing site, but the Program Office said, “No, we’re not going to fund it.” It turns out that in November of 1976 I was visiting Houston. I was in Dr. [Christopher C.] Kraft’s conference room, the Center Director. The astronauts were at that time giving a pitch to the Center Director on making Northrup Strip into an Abort Once Around

landing site. That means that they were interested in Northrup Strip. During that pitch I noticed one chart there said that, “Edwards Air Force Base does not have a standing water problem.” That didn’t fit with my thinking because I had witnessed in my tour [there] that the rainy season was terrible, because you get one rainy day after another and it just floods, you just can’t get rid of the water. So I decided, “I think I’ll call Edwards and find out what the real truth is.”

I called. A [man] named Joe Reif was the manager of the lakebed itself. He informed me, “Well, no,” that was not a truth that they put up there on the board. “We have downtimes that can last as long as two or three months. In addition to that, once the water finally goes, we have to fill in all the fissures that have occurred, tamp them down before the lakebed can be declared operational.” So Edwards wasn’t telling the truth. I found the truth. In December of ’76, one month later, we got a visit from Dr. Kraft’s staff. They used to make an annual visit to White Sands to see how is everything going? During that pitch, I told Dr. Kraft personally that Edwards does have this serious problem, and that someday he could be embarrassed by not having a landing site being ready to fly and have no landing site. He said, “Well, let me think about it.”

He watched Edwards the next two years, ’77, ’78. Wet years both years. He [said], “We’ve got to do something.” In [late] ’78 he said, “Make Northrup Strip a Shuttle landing site.” That’s when we became a Shuttle landing site. He had the crane moved over from Huntsville, Alabama [Marshall Space Flight Center]—it was NASA property—and we put some electrical power in there [also]. That’s all we needed, because we had everything else. We had all the landing aids, everything was ready for landing. It was just getting the vehicle out of there was the problem. We had to have a crane.

Now let me step on down to STS-1. [It] was the year before flight. We did all of our training, all of our practice, all of our simulations. We were ready for STS-1. About two weeks before STS-1 was supposed to fly, they were doing a special test on the External Tank. They filled it up with hydrogen and oxygen. The Spray-on Foam Insulation, which they call SOFI, started peeling off. Halt everything! Have to fix that problem. By the time they fixed it, Edwards had dried out, and they got the landing. So we missed the first one.

The second—similar. About two weeks before, they were doing a special test on filling the forward RCS (Reaction Control System) tanks. An oxidizer [fluid] overfilled and a lot of the tiles fell off. Stop everything! By the time they fixed that problem, the lakebed was dry, and they got that landing. So we almost got not only the first landing, but the second. [But], we did get the third one.

Now the third one. This is really interesting. It was the previous day, and they said, “We want you to show up at 5:00 in the morning at the site, and we’re going to have this teleconference with the whole world, [on May 18] with Dryden [Flight Research Center (DFRC), Edwards, California], [the military support team, the contractors,] San Francisco [Ames Research Center, Moffett Field, California], [NASA] Headquarters [Washington, D.C.], Johnson [Space Center], Kennedy [Space Center (KSC), Florida], Rockwell [Corporation], everybody. [We talked] about what to do about STS-3.” Because the lakebed was flooded, they didn’t know where they were going to land. We were ready.

Dr. Kraft conducted the meeting. He said, “Air Force, are you ready?” Yes. “Army, are you ready?” Yes. “NASA?” Me, am I ready? Yes, we were ready. “Johnson, are you ready?” Everybody was ready. “Let’s change the site.” Five days before the launch. It was ridiculous! It was almost asking the impossible, so that immediately set a lot of things in motion. First thing

they do at Edwards is load up two trainloads of equipment. The first trainload was needed for the landing itself, with the convoy equipment, to escort the vehicle to a safe place. The second trailer had all the cranes and heavy bars and slings they use to lift the Orbiter onto the back of the 747 [Shuttle Carrier Aircraft] so they can ferry it off. The second trainload was for ferry, the first load was to support landing.

Two large trainloads came through Las Cruces. The people were waving at the trains. It was excitement beyond belief, everybody was totally excited, including me. It came launch day. Launch [was] uneventful. Supposed to land on the 29th, but it couldn't. A sandstorm came up.

My wife had heard some wind chimes the evening before. Said, "Uh-oh, it's windy." I said, "Oh, don't worry about it." Next morning, I was driving up [U.S.] Route 70 going north. My car started buffeting. I said, "Uh-oh, I think we're in for a bad day." We were. It was so bad. [Ironically the weather from May 18 through May 28 was perfect. This weather change was a huge surprise.]

John [W.] Young [chief of the Astronaut Office] tried to go into the east-west runway with his Shuttle Training Aircraft [STA]. He finally said, "Fellows, we can't do it, give it up." He called the first wave-off of the program. There's been many since, but that was the first one. That afternoon I was [driving] General [James A.] Abrahamson, who was [from] Washington. He was the head of the program. He was going over to see the NASA administrator Jim [James M.] Beggs, who was also there. This was so important that Jim Beggs showed up for this landing. We had them in a double-wide trailer. I was trying to drive him over to Beggs. He said, "How can you see?" I said, "I've done this so many times, sir."

[I interjected a recommendation], "Sir, I recommend that you try to land at the very first landing opportunity," which was 7:30 that next morning. He said, "Well, we're going to have a

major teleconference. We're going to be talking. I'll recommend that." I wasn't involved with the teleconference.

They had their teleconference. They came back and decided the 9:00 landing time would be [used]. The 12:30 one was no good, it was going to be too windy, but it wasn't going to be windy [at 9 a.m.] They wanted to give all the VIPs [Very Important Persons] time to get out there and [get] all the cameras ready. They really should have used the 7:30 landing, because shortly after they landed at 9:00 a.m., it got real windy. [When] Commander [Jack R.] Lousma was giving his briefing to the press, his hair was blowing all over. He was visibly shook by how windy it was.

The day before the landing, I was talking to General Nord, who was in command at the time. Alan A. Nord was the commanding general of the Missile Range. He said, "Alex, what do you think? [Are we ready]?" I said, "We need one thing, General. We need an American flag here." He said, "You're right. We need a flag." So he put the flagpole up. Immediately I went and got a flag from the NASA site. We had it up there for the wave-off day and also the landing day. It currently resides in the museum. It's fully encrusted with gypsum. It's a beautiful [flag], it's just simply beautiful.

It was windy several days thereafter, but we managed to turn it around in seven days, which is the allotted time. It took off on a Sunday. I think it was April [4th.] Flew over Alamogordo [New Mexico], waved its wings as a tribute to the city for their help and went off. So it was successful, memorable [beyond belief].

I remember calling my wife at the deorbit burn. I said, "Honey, they can't go anywhere else, it's got to land here." She almost fainted. In fact, she was in [the] Public Affairs Office at

the Missile Range. Thank God the officers there found some brandy. They gave her a little boost.

I'll tell you what we did on runways. All we did with runways—it was a short 10,000-foot—there's no oil on it, it's just compacted gypsum. Just plain dirt.

ROSS-NAZZAL: That's what it was when you started?

PACZYNSKI: Yes, it compacts well, and you can scrape it flat very easily. That's all, but NASA wanted 35,000 feet of runway. In fact, John Young asked me, "How long can you make it?" I said, "Well, we can make it seven miles long or ten miles long." He said, "Seven miles is good." So we made it seven miles long to support the Shuttle. We actually didn't need that much for training. We only use 15,000 feet. Kennedy's landing strip is 15,000 feet long, so that's what we use. The east-west runway, we also made it seven miles long. It was difficult, but we managed to get the seven miles in. The abort runways are only about 10,000 feet long.

Now the Space Harbor Operations Complex. We've got TACAN [Tactical Air Navigation System] there, which is the navigation aid. We've got a microwave landing system there, which they use in final approach. We've got two of them as a matter of fact. We've got a bunch of searchlights, big heavy-duty searchlights shining down on the runway for night landing practice. Got all kinds of markers on the runway, touchdown markers, edge markers. Signs everywhere.

We have a crew of about 20 running the place. We've got some heavy equipment operators. They do scraping, leveling, and cleaning up. We have some electronics technicians that take care of all the electronics. We have some tower operators. Those guys talk to the

airplanes and talk to the Missile Range. It's a big coordination problem. They have to talk to the Missile Range and make sure there's no airplanes flying around, there's no missions on, and we have the airspace. They talk to the airplane at each approach. They usually make about 19 or so approaches on each mission. Typically there's two missions a day. So you can see there's probably 1 million [total] approaches have been made. When we finally end this program, we're going to actually try and count how many approaches have been made and how many missions were scheduled with the Missile Range.

When this was first proposed, I had to get permission from the Missile Range. I talked to the chief scientist, and he said, "You mean we have a chance of getting the Shuttle here?" I said, "Yes." His eyes lit up. He said, "Okay, you can do your training project." They don't [usually] do training projects here, but they did in our case.

I also had to find a crash rescue crew, [or] I had to train my own. So I went to Holloman Air Force Base, talked that fire chief into supporting us. He hired a few extra people. He supported it. So Holloman was a big help, Missile Range was a big help. We had just the right kind of resources here. We had William Beaumont Army Medical Center in El Paso [Texas]. We had Fort Bliss [U.S. Army post, Texas] for all the troop support, guarding the place with all their weapons. The area was just rife with the right kind of resources for this project. ...

ROSS-NAZZAL: Was that [site funded] because of George [W.S.] Abbey? Mr. [Robert E.] Mitchell told us today something about that.

PACZYNSKI: Abbey was a big supporter. Actually, Abbey and Young came out to visit shortly after I activated the site. We were talking about Victoria Peak where the gold was hidden, and

we were talking about going to get the gold. I happened to mention it. I said to John, “This would be a good Shuttle landing site.” John Young leaped on that immediately. He said, “You’re right, this would even be better than Edwards.” From that point he convinced Abbey, and those two were our main supporters. They just fought like the devil to get the Program Office to fund it, but they wouldn’t do it because it’s several million dollars [cost]. They finally did come around. When I told them about that water problem, [they were] over a barrel, because here’s what could have happened: they could have said no. Then they could have said, “Okay, here’s STS-3. We can’t fly because Edwards is wet. Northrup [Strip] can’t support.” The reporters would say, “Why didn’t you put a crane there?” Dr. Kraft would be embarrassed because he didn’t think ahead to have a backup landing site.

That’s some of the innuendo that goes around here. [They were] over a barrel. I said, “If you don’t do this, you might be embarrassed.” Sure enough, they did it. I think they did the right thing. They said, “We need a backup site.” They did it on technical merits.

“Describe the Space Harbor operations complex.” I can tell you what we have there. We have about 25—we had as many as 30 people there at one point. Actually, during that landing we had thousands of people. Goddard Space Flight Center [Greenbelt, Maryland] flew in a telemetry van from Hawaii, put it on Tula Peak because of the S-band [frequency used by NASA]. The Missile Range worked in different telemetry frequencies. We had our own frequency, so we had to fly in this thing from Hawaii, set it up on the peak there, checked it out.

Also Langley was a big support, Langley Research [Center, Hampton, Virginia]. They had their wheel guys. They came out there with their vehicles. They were swerving, doing all kinds of tests on gypsum to see what effects it would have on the Shuttle. Would have no effect.

Some people studied its corrosiveness. When you mix it with water is it corrosive? It is, but not [bad].

One day we had the whole [management team] of NASA out there. It was wet, there was water standing on the ground. I took a pickax, swung it wham into the ground, and it went in about an inch. I said, “This is hard enough to hold a Shuttle. Even underwater.” They were amazed at its strength.

“When was the complex built?” It started in 1976; 1978 it became the Shuttle landing site. “Describe the layout, makeup of the runways.” The runways are just gypsum. Just plain old dirt compacted. What they do is just run a heavy vehicle over it. We use a scraper to scrape it [flat]. After we had the *Challenger* accident [STS 51-L], we actually went out with a laser and laser-leveled it, got it really smooth. [During the stand down], we also moved the deservice area from where it was in the middle of the desert to an upwind site, so that it didn’t matter whether the wind was blowing or not. It wasn’t going to blow any dirt or dust into the [STS-3] Orbiter. That was a concern. It actually did blow a little bit of dust into the interior of the Orbiter, but they vacuumed it out. It wasn’t really a problem, but they were worried about it.

That Space Harbor is a national asset as far as I’m concerned. The Air Force has put it on their list of emergency landing sites. There have been several landings there. There was one Air Force [plane] that flamed out, and the guy made an emergency [landing]. He’s supposed to bail out because he doesn’t have to be a hot dog pilot, but he managed to land it, so that was a plus. There was also an Air Force tanker or four-engine airplane that had to land there and stay there for a few months. So it’s been used by other agencies, mostly Air Force. I think someday it’s going to be a spaceport. The [Japanese] came out to look at it as an emergency landing site when they were considering building a vehicle for space. There was worldwide interest in it. During

that landing [of STS-3], the whole world was watching us. The Pentagon stopped work. Everybody was watching TV, we were the center of the world at that [time]. I had my 15 minutes of fame right there. This is interesting, isn't it?

ROSS-NAZZAL: Yes, it's great.

PACZYNSKI: "When did the astronauts begin flying [the Shuttle Training Aircraft at White Sands]?" They actually began flying in T-38s in May of 1976. The STAs weren't ready till a few months later, and then we got into that.

There are two missions a day, 19 approaches each mission. What the astronauts typically do is get in his T-38, leave Ellington [Field, Houston, Texas], land at El Paso [International Airport, Texas], hop into an STA, get a briefing. Then they fly up to the site, do 19 approaches, go back, get in an airplane, go back home, typically.

"Were there any personnel working in real time as pilots and commanders flying the STA?" No, we were all ground people. Although I did have a lot to do with the El Paso Airport. That was part of my responsibility, I actually got them the hangar.

ROSS-NAZZAL: Would you tell us how you did that?

PACZYNSKI: Yes. It was in '76. We were looking at the Continental [Airlines] hangar, which is at the west end of the airport. All of a sudden they said, "No, you can't have it." So I called a friend of mine, Dick Azar, who's a personality—he owned the Coors brewery distributorship, his

wife became mayor. He's [important] in El Paso. Also a World War II pilot, [he was] very interested in flying. He found me the hangar we're using now. We leased it and fixed it.

What we should have done was bought it. We tried to convince Headquarters to buy it, they didn't want to buy it. We've been there for 25 years now. We could have paid [for it]. The lease has been paid all these years, just a terrible waste of money.

"What were the hours?" We worked two shifts. The pilots typically have to have early morning flights because they want to get the Sun angles right. Afternoon flights, night flights. So we had to be sure we had somebody there from dawn till after dark.

ROSS-NAZZAL: How did you come up with everything that you came up with? You started out, you had no facility. How did you come up with this whole plan?

PACZYNSKI: I borrowed stuff. We had no budget in the beginning. I went and borrowed a building. It was stationed at Ellington. It was used for the lunar lander test operation in Apollo. It was a test control center for lunar lander test vehicle, which Neil [A.] Armstrong flew and a lot of the guys flew. They brought that down, so I borrowed that thing, put it on a little flatbed. I borrowed some air-to-ground radios from the Missile Range. I borrowed a barometer so I could calculate the altimeter settings. I borrowed everything, borrowed telephones. I had no budget. They sent me \$40,000 from Houston to build a runway so I gave that to the Missile Range.

Then I started getting a budget. I don't know what the budget is now, probably \$2 million a year. So that's how it began, no budget, shoestring operation. They gave me a chance, and I was successful. Can you beat that?

ROSS-NAZZAL: That's fantastic. Wow! Just \$40,000, that's how it all started.

PACZYNSKI: Yes, that's how it all started.

“When did you learn that we were going to get the *Columbia* [STS-3 landing]?” It was five days before launch. “What, if any, equipment had to be borrowed [from Holloman Air Force Base]?” I told you about the two trainloads. Holloman supplied a crash rescue crew. They also supplied Harvest Bare. It's a complete airfield in a package. You can fly it anywhere in the world and set up a complete airfield. Complete with hangars, enlisted men's quarters, toilets, everything you need to run an airbase. It was a package. They brought out part of that stuff to support us. They put up a couple of hangars and a few other buildings for us. Holloman was wonderful in support. I can't say enough about it.

Let me tell you about the Missile Range. This is great, this is another anecdote. After the wave-off, first day, 29 [March 1982], we looked at the runway, it was wrecked. There were humps, bumps, and dips, and it was going to be terrible to land on. So I asked the Missile Range, “Can you do something?” They got ten graders out there all night long. Headlights blaring—wind had died down—working their butts off. The next morning it just looked beautiful. I [have] to compliment the Missile Range. Did an excellent, wonderful job in that. There was all kinds of magic going on—I considered it magic. All these things had to go right or else we were dead.

ROSS-NAZZAL: It's great that you had all of these relationships in place.

PACZYNSKI: Yes. Actually, that was a key factor. I was so familiar with the area and where I could get things and who to talk to and who to borrow things from that I was the expert and the key person, the central person in that whole operation. Any time anybody wanted to know anything, they had to go ask me how to do it, because they couldn't find out any other way. I just knew. You spend enough years doing something, you get to be an expert, and I did that. It was fun. I wasn't the manager, there were a lot of managers. I was talking to generals and janitors and all kinds of people.

One thing about Kennedy Space Center, they had to do some repairs after the landing; they had to replace a few of the RCS engines. Let me tell you the background. I said, "Hey, fellows. It gets windy out here. You better think about how you're going to handle the wind." They said, "We have engine covers." Okay, fine, I didn't worry about it, [but] they didn't use the engine covers. Why, I don't know, I just don't know. It cost about \$1 million to change those engines out. Actually, they tested out okay. They went and tested them at the manufacturer. They were all right, but they just wanted to be sure, so they replaced them. You know how NASA is with that.

ROSS-NAZZAL: Can you tell us about the media and the public interest of landing STS-3 out here?

PACZYNSKI: Yes. The general had a tough time deciding whether to let the public on board or not. He said, "Well, I'll have to listen to what my headquarters tells me." They said, "Yes, let people in." So he let them in, but he let them in through a gate that's really up there in Tularosa [New Mexico]. It's a long drive, but about 4,000 people actually came to watch it. The next day

after wave-off, hardly anybody came back. They just said, “No, you have another wave-off.” They lost interest quickly.

General Nord wanted to name the place Columbia Site. Senator Harrison [H. “Jack”] Schmitt wanted to name it Space Harbor. They were having a battle back and forth. Senator Schmitt won, but General Nord did this. He said, “Okay. At the place where the astronauts got off the bus to greet their family, we’re going to name that Columbia Site and put a marker.” They put a survey marker right there that says Columbia Site. So he got his way, and the Senator got his way.

ROSS-NAZZAL: And it’s still out there today?

PACZYNSKI: Yes, it’s still out there, but I always wondered how they came up with the word Space Harbor. I know Senator Schmitt, I never did ask him how he came up with it. One of his staff must have said, “Well, it’s a safe haven, we’ll just call it Space Harbor. That rings pretty well.”

ROSS-NAZZAL: How long was the media here?

PACZYNSKI: They came almost immediately. When they got the news they said, “Oh, this is exciting.” So they started within a day. There was about six big, huge [satellite] dishes out there, people constructing [stands] higher up so they could get their cameras up above so they could see. It must have been 500 of them almost immediately, ended up about 800. They were bused out, they wouldn’t let them drive their own cars. There was about 80 people or so working

on that. There was about 80 people in the Air Force working on the encampment area. There was about 80 people working on the convoy area. Seemed like it was groups of 80, a lot of different groups of 80. Eighty people working in the control center working on their instrumentation and stuff. [There were] a lot of cameras.

The Missile Range provided camera support and guards. In fact I understand—I don't know this for sure—the state police surrounded the Missile Range, guarded every exit and entryway. They were worried about spies or some crackpot coming in to wreck the spacecraft. There was also a SWAT [Special Weapons and Tactics] team that came in from [Fort] Bliss. They were ready for some crazy guy driving a car and ramming it into the Shuttle. They were ready for anything, it was really quite an operation.

ROSS-NAZZAL: Did you have to participate in any sort of media interviews? Can you tell us about that?

PACZYNSKI: A couple days before, I was asked to go down to the Public Affairs Office at the Missile Range. They were having a press conference. I gave a briefing to national press. [Journalist] John Dancy and a few others, NBC, CBS, ABC—they were all there. I gave a briefing about what we expected to see in the way of a landing.

Let me tell you about the landing. What they had planned to do is make a left turn coming in. They were coming over, but the flight controllers got worried about their drag coefficient, because the winds aloft were high, and they were going to be flying into the wind all the way. Said, "Oh, if those are wrong, we might not make the runway. We better not go in that left turn, we better go on the right turn in, just straight in." So they did that. That was a late

change. Unfortunately, when they came in [for landing], they were going way too fast and didn't put out enough speed brake. Landed going 50 miles an hour faster than the highest speed [Commander Lousma] had practiced at.

Wait till I tell you the rest, you're going to be shocked. Being a good pilot, he wanted to land right on the touchdown markers. He could have let it drift, let it slow down itself, but he forced it onto the ground. Whammo! The main gear hit, almost broke the main gear. Then he started rolling along, rolled about a mile. Then he said, "Uh-oh, going too fast for the forward gear." It was coming down, he pulled the stick back, and he popped a wheelie. He slammed it again forward, and he slammed the front gear. So it was almost a crash. The gear withstood it somehow. So he not only landed hard, he almost broke the front gear. He landed way too fast, he should have just let it glide down. He's a good pilot, good friend of mine.

One other anecdote. Afterwards the Kennedy [Space Center] guys come and they say, "Can we go upstream here and look? We think we lost a piece of the Shuttle." I said, "Yes, go ahead." They came back with a piece of the Shuttle. The main gear doors, when they opened up, they flipped off a piece about [an inch cube]. [Demonstrates] We learned an awful lot from that landing. That's the bottom line, we learned an awful lot: how not to fly a glider.

They decided they'd learned enough that they could then go directly to a shorter runway. They did [for] STS-4. I didn't think they had learned enough. I thought there was a lot more to learn, but they said no. [But], it was successful.

ROSS-NAZZAL: You said that you were good friends with Jack Lousma. Were you good friends with [C. Gordon] Fullerton as well?

PACZYNSKI: Yes, I knew both of them quite well.

Because I visited [the] El Paso [NASA base] a lot, I would talk to the guys. I got to know about 100 astronauts, maybe more, real personally [like Robert L. “Bob”] Crippen and Young. Young is one of my favorite guys. I was in his office one day at Johnson Space Center. There was this picture of the Earth. I said, “Hey, that’s a neat picture.” He said, “Yes, I took that picture on the way back from the Moon. We were 9,000 miles out.” I said, “Oh, neat.” So, without telling me, he sent me a copy of that picture with the inscription “To Al Paczynski, thanks for your efforts in helping to get this effort going.” Signed, “John Young.” He was so nice he had to send me that thing personally. Wasn’t that nice of him?

ROSS-NAZZAL: That was nice.

PACZYNSKI: He’s a tremendous guy. Lousma was a good pilot, he’s an ex-Marine. I liked him. He practiced there a lot.

ROSS-NAZZAL: Did you get to go out there and greet the crew as they were walking out of the Orbiter?

PACZYNSKI: Oh, no, that was for [VIPs]. General Nord was there, Senator Schmitt was there. I was just the center of operations, I wasn’t the leader. I give a speech once in a while.

ROSS-NAZZAL: Do you? About the Space Harbor?

PACZYNSKI: About this, yes. I had to make a decision, “Do I want to get involved in this thing or not?” I said, “Carpe diem.” I did. But if I hadn’t, there would have been nothing here—you wouldn’t be here, they would have had training someplace in Arizona, maybe Williams Air Force Base [Arizona] or Davis-Monthan [Air Force Base, Arizona]. It couldn’t be used for a Shuttle landing because it would be too short. They would have had to let STS-3 sit there for a month, lakebed dry, and that would have been very costly.

Colonel Paul Smathers was the guy in charge of the Air Force when I took Allen Manson over to talk about how safe is it going to be for NASA to fly in here. He’d go into great detail how they protect the airspace of the Missile Range. He said, “Once in a while we get an intrusion. We ferret them out, and we give the guy hell and fine him.” I want to mention him, that he was very instrumental.

ROSS-NAZZAL: Was he with the Army or with the—

PACZYNSKI: Air Force, with the Air Force contingent assigned to the Missile Range. They took care of airspace management.

ROSS-NAZZAL: Were there ever any concerns? I know that sometimes U.S. 70 is closed because of missiles going overhead. Were there any concerns about that when you presented this idea?

PACZYNSKI: No, there were no concerns about the Shuttle. They left [the roads] open all the time. It’s often closed because of missile firings. ...

The Shuttle laid rubber when it landed. It laid 40 feet of rubber, main gear and also the forward gear. I had my people pick up the rubber, lay it in boxes, layer [by] layer. They said, “What are you going to do with it?” I said, “[I have plans].” They thought I was going to have it tested someplace. Really, I talked to my manager. I said, “What we need to do is have a memento. Put [these pieces] in Lucite [with a] little plaque saying, ‘Here’s a piece of the Shuttle rubber, here’s a piece of gypsum. Thank you for your support in helping.’” We distributed that to about 500 people.

I got nothing from NASA. It was altruistic on my part, just totally altruistic. I got not one thing, no raise, no promotions. Let me tell you about the Missile Range—I told Colonel [Len] Sugerman my story. He said, “I want to write you up for the Hall of Fame,” Missile Range Hall of Fame. He wrote up a nice piece. He sent letters out to Dr. Kraft and a few of the generals for letters of recommendation—you had to have a lot of recommendations. I got in the Hall of Fame. My picture is hanging there at the Missile Range right now. So that’s my reward. No money, no promotions, no retirement pay, but that’s okay.

ROSS-NAZZAL: Did you get a Silver Snoopy [Award] from Lousma or Fullerton?

PACZYNSKI: No, but one of my people did. That’s a political thing. I deserved one I’m sure, but nobody ever gave me one. That’s a small thing with me. A guy at El Paso got one. My chief of operations got one, a few other people. It was a lot of politics involved. I was constantly trying to come up with arguments for landing site. It took six years from inception to landing. That’s quite an effort, six years. But I was successful.

ROSS-NAZZAL: You mentioned the politics of getting this site. Who were some of the people in the program that were opposed? Or was it just the program in general?

PACZYNSKI: It was in the Program Office. Bob [Robert F.] Thompson was the chief of it. Thompson wasn't that hard over, but his lower guys recommended, "No, we really don't need that landing site. Nobody's proved to us that we need it." All you have to do is use common ordinary logic. If you have to have one long landing site, you better have a backup. If [your only one is] not available, you can't land. What if it was in the air and it rained there, where are you going to land? You have to pick a shorter landing site, take the risk of crashing, running off the end of the runway.

ROSS-NAZZAL: Were there also politics between the Centers, between Dryden and KSC and JSC?

PACZYNSKI: Yes, KSC was a little bit iffy about it. We used to have meetings, landing site operations panel (LSOP). Big group of guys: the fire guys, the safety guys, the doctors. Everybody was defending me. We talked about landing at Edwards. They said, "Now, you guys can study landing at White Sands, but we're not going to spend a dime on it." They'd constantly say that. So people drew up their logistics plans, try to swing equipment from there to here, all on the cheap. We even made a budget ourselves. Said, "Okay, we're going to have to spend \$300,000, because here's the things we got to do." On the day of landing, we just threw it away. We knew it was going to cost a lot more, because JSC was ordering this and ordering that. "We need bricks and we need wood." It was crazy, I couldn't control it.

ROSS-NAZZAL: How much did it end up costing?

PACZYNSKI: I don't know. I don't think you can calculate because there's so many [factors]; there's Langley costs, there's Goddard costs, there's Johnson costs, there's KSC costs. There's no one place where you can count it all up, I don't think. We can count ours up: the Missile Range, then there's all the military support; I can't even guess what the total cost would be. There's just too many inputs.

The day that Kraft said, "Holy [Moses], we've got to have a backup," that was neat. I just felt like I finally did something good in my career.

ROSS-NAZZAL: You talked a little bit about STS-1 and STS-2. How did you prepare for that possibility that there might be a landing?

PACZYNSKI: Well, two weeks before, I felt sure we were going to get the landing because Edwards was underwater, and everything was going well. The Cape was proceeding as if they had a landing site, us. They were proceeding to prepare the vehicle, then they ran into the spray-on foam problem and that shut everything down. So we weren't really needed for STS-1 because by then Edwards had dried out and they had Kennedy as a backup site.

John Young said, "For the first four landings, we need a long runway so we can make sure we can get it done." He just wanted it long. So we had a long runway, but it turned out that because of that foam problem we were out of the picture. It was looking good for a while, I was certain we were going to get that landing.

Then the second flight, same thing, they were filling the oxidizer tanks. It overflowed through the overboard vent, just flowed down the vessel. Peeled off tiles, they started falling off. “Oh crap, not again.” I felt like, “Lord, what have I done?” We did get the third one, so I’m happy, and they didn’t need the fourth one. John said, “Okay, three is good enough,” and they went to hard [short] runway for the fourth landing.

ROSS-NAZZAL: Did you have people from Edwards or Kennedy there for STS-1 and STS-2? How did you prepare for those?

PACZYNSKI: We had several people from Kennedy. Nobody from DFRC. We had a convoy commander, we had a convoy vehicle. We were ready to take an emergency landing. Holloman was there, they had their crash rescue people on site, about 80 people. We had about 20 or 30 people ready, and about 15 of them were from Kennedy. And we’ve been supporting every flight from there to this day. There’s always been somebody on site ready to take an emergency landing because if they lost two APUs [Auxiliary Power Units] for instance, they had to have a long landing site. It would land either Edwards or here, so there were some situations where they would prefer to land here.

The runway was seven miles long, 300 feet wide, but we made them 900 feet wide later in the game. So we had all kinds of capability to handle impaired Shuttles. So yes, they were prepared to use us if they really had to.

ROSS-NAZZAL: For every mission that went up, you were prepared.

PACZYNSKI: Every mission. I think there was about one or two missions where they said, “White Sands, you’re not needed this time.” That’s when the weather was just super fine and they knew they had two good sites. But for almost every other one—in fact, I was on the console when the *Challenger* wreck happened. I was shocked, I was just stunned. I couldn’t talk—I still can’t.

ROSS-NAZZAL: I’m sure that was difficult, being so close to the astronauts.

I think that the only other question that I thought of is to ask you about some of the contractors who worked out at your facility. Do you recall who some of those contractors were?

PACZYNSKI: There were a number of contractors. At first I had just a co-op [cooperative education] student, [Marty Hammers], helping me. Then we graduated to a couple of helpers. We just grew little by little. At first Kennedy sent people out here to [man the microwave scanning beam system]. Then they finally said, “Well, let’s give it to Alex,” and they gave it to me. So I took over that, gained a couple people there. I gained a couple people in heavy equipment, then I hired a few tower operators that retired from Holloman Air Force Base to run my tower—I used to run the tower myself.

It was pretty much a one-man operation for a long time. Now it’s grown, it’s fully matured. It’s really a nice operation. We’re going to have a celebration in 2010 when it closes down. I’m going to write an article on how it began for our newspaper, and I’m going to write an article about STS-3. Then I’m going to let them write an article about what benefits did it bring to the area: how many missions, how many homes purchased, how much money did it

bring in, how many people. I provided complete careers for people, there's people that have been here 25 years—complete careers. Can you beat that? Just little old me.

ROSS-NAZZAL: That's great. So initially in '76 it was just you and the co-op?

PACZYNSKI: Right. I sent him out to do the lights, turn the generator on so the lights would go on. We'd have problems with people driving across the runway. I'd call the Missile Range, "Hey, get these people off our runway." They sent me out an MP [Military Policeman]. I had an MP running around. It was ridiculous in the beginning, but I tried my darnedest to make it a success because I did want to have a Shuttle landing site. That was my major goal, not training. I did get that, but I only got one landing. The reason was this: we had that wave-off. Senior NASA management got really turned off by the blowing dust, but since that time, they've had many wave-offs at Kennedy. They found out that wave-offs are not an uncommon thing, so now they will use our place. They finally acceded to saying, "Oh, okay, you're acceptable." But for a long time there they said, "White Sands? That is career-limiting." In other words, you talk about White Sands, you're not getting any more promotions.

ROSS-NAZZAL: What impact do you think that the Space Harbor has had on the Space Shuttle program, if you had to sum it all up?

PACZYNSKI: I guess in the big picture very little, but back then, the first three flights, we didn't know anything about landing a Shuttle so it was extremely important to learn that stuff. Even on [STS- 3], we learned how not to land. They learned about speed brake settings, they learned all

kinds of stuff. So early in the program it was very important, that's all I can say. In the big picture, now that it's all mature, obviously it's a small deal. Back then it was huge. [There were] so many people with eyes on us, you couldn't believe it. I talked to a AT&T guy [who] said, "We were short on communication. We had to break out some R&D [Research and Development] equipment to support you guys. We had to call Whippany, New Jersey and get some." It was an all-out effort by all kinds of people.

ROSS-NAZZAL: What did you think when you finally saw *Columbia* coming in and landing? What was your feeling?

PACZYNSKI: I thought, "My dream is complete." It was something, it was wonderful. It really was.

ROSS-NAZZAL: Yes, I can imagine. Thank you so much for coming today.

[End of interview]