Transcript of an Oral History Interview in the collection of the BREVARD COUNTY HISTORICAL COMMISSION 308 Forrest Ave., Cocoa, FL 32922

Nancy: County Historical Commission Oral History Video Project. An interview with James Mizell, Titusville, Florida. March 27th, 1995. Interviewer Nancy Yasecko, cameraman Robert Gilbert. Equipment, camera Sony DXC M7. Recorder Sony BVW-35. Copyright Brevard County Historical Commission 1995. Okay, tell us who you are, when and where you were born, and what brought you to Brevard County.

James: My name is James Mizell but I'm known as Jim throughout the area. Back in the 1950s I was in the Navy, and I flew during the Korean war from 1950 to 1955. I was a graduate
[00:01:00] of Mississippi State University in Electrical Engineering. After we got out of the war in '55, I went back to school. There were not too many jobs around in the state of Mississippi so the place that we turned to look for a job was over at Huntsville, Alabama where the Germans over there, Dr. Wernher von Braun, Kurt Davis, Dr. Hans Gruene. Right away they recognize that I had been a former flyer, and I was an engineer and was a very practical person with my hands. They decided they would send me to Cape Canaveral, to help launch missiles. It was a very august group.

Nancy: Okay, cut. Just I want to make sure I have ... Okay.

James: After coming out at Mississippi State I was looking for a job, and I have flown in Southern California, and have flown in Florida in the '50s down to Jacksonville and into the Miami area and down to Guantanamo Bay in Cuba. So I was very familiar with the
[00:02:00] area, and I decided there were only two places that I'd really like to live. One of them was Florida, and of them was Southern California. Southern California was already getting overpopulated in the '50s so I picked Florida because it was more like my home in Mississippi.

After going to work in Huntsville I worked with the guys who had fired about 72 V2s out at White Sands. They had brought back about three hundred and fifty box car loads of V2 parts and missiles from Peenemünde, Germany. They had learned quite a bit about those missiles, so they had started manufacturing some missiles in Huntsville, and of course they sent us down here to the Cape to actually fire the missiles. We were a part of the missile firing lab which was only a branch at that time of about a hundred and fifty people. They brought down some of the early red stones, and I worked on about eight major programs at the Cape over the last thirty-five years.

I started out with the Red Stones, we went to the Pershing's, and the Jupiter's, and the
[00:03:00] Centaur. The Saturn I, the Saturn IB, the Saturn V, Skylab, the Space Shuttle. Then after I retired from NASA, I worked about one year on the Space Station, on the operation's task force which actually decided how we were going to design the Space Station, and how the various parts were going to work together on the ground. After I retired from NASA I went to work as a correspondent, working with the media, with various news media and was called back by NASA as a consultant to the press.

So I've had a very long, and very interesting career, and certainly I participated in man's greatest adventure which was the Apollo program. I think they're going to look back

about a hundred years from now and decide that probably was the most adventurous program that we've ever had in United States. It's going to be equivalent to Columbus discovering a new world, I think. So we were so close to it, that we were rather blasé about it at the time. I remember when we were checking out three Saturn Vs, simultaneously and we had twenty thousand people here at the Cape doing that work.

[00:04:00] Very, very exciting times. The time went by very quickly. I think I missed the entire Vietnam War because I didn't watch television, or read the newspapers. I was primarily concentrating on the Saturn program along with all of my fellow workers. It's been a wonderful time down here in Florida. Some of the most colorful things about Florida of course was coming in here in the '50s. No one was here in the first place. If my memory serves me correctly it was like twelve hundred people in Titusville where I chose to live. Practically no one in Cocoa Beach. There was a wooden a bridge between Titusville and Orlando which a guy burned down one night, because he fell in a hole with his tire and blew out his tire. He took the tire off the car, and set it on fire. For six months we had to go by State Road 46 to get to Orlando. There was no way to get to Orlando from here in those days.

There was one thing we had in those days that we don't have today did I look upon as something we really need. We had a railroad train that had passenger service in those
[00:05:00] days, between Jacksonville and Miami about two times a day. Today, I wish we had some of that antiquated form of travel to remove some of this traffic off the highways, but there were no major highways at all in Brevard County. I think there were around fifteen hundred people in Titusville like I said, and around twenty-eight thousand in Brevard County when I came here. There were no major airports, no major schools, no major universities, Titusville High school had about three hundred students. Today they are fifteen hundred students in two different high schools, so we have close to three thousand high school students in the city today.

You can imagine the problems that we had with education for our children. We had a tremendous problem with churches. I started out in a smaller church of three hundred people, we started five mission churches over those years. All those churches now have about five hundred each. One of the churches has over two thousand members but the original church is still only about three hundred people. We set up the community to be
[00:06:00] a good bedroom community, good churches, good schools, and a good standard way of living. That was one of the things that we strove for, that we didn't want to get mixed up in the Cocoa Beach scene, or any of the transients that were coming and going for the space program. Many of us old timers retreated to Titusville as the place of choice to live.

Nancy: When you came here what year was it?

James: I came here in '56 at first. Then I went back and forth to Huntsville. We had a C-47 that would leave out every Friday afternoon. We fly the Germans and some of us back to Huntsville, we'd spend the weekend in Huntsville, come back to work on Monday and continue on. We would check out the missiles in Huntsville, we would actually static fire the missiles in Huntsville. Then we would ship them down here, then we would fire

them at the Cape. There was a very much a shortage of personnel. We had a very few technicians and very few engineers in those days.

Sometimes we were firing once a week, sometimes we were firing every other week.
[00:07:00] We were firing missiles quite rapidly because we worked for the army at that time. I was a civil service employee, a government employee working for the US Army. It was called the Army Ballistic Missile Agency. Later on in 1957, General Eisenhower made the decision he did not really think that we should send people and things into space with military weapons. I think probably he did not trust the military industrial complex and we still have a few people today that don't trust that group.

He decided to set up a civilian space agency, much to the chagrin of the Department of Defense and the Air Force. There has always been a tremendous amount of animosity between the Air Force and NASA after it was set up. I believe that when we built Kennedy Space Center, it was Kennedy Space Center today which was called the launch operation center in those days, I believe it only passed congress by one vote due to the heavy lobbying of the defense department that said, "We already had a Cape Canaveral.
[00:08:00] Why should we have a civilian space launch site so close?" They didn't mind having Kennedy Space Center but they felt that should belong to the Air Force also.

Nancy: Okay. This guy throwing a few things around.

James: One of the major problems ...

Nancy: Let me ask you a little bit about, you just touched on the personnel now. You must be familiar with the term Cape Rat. What is a Cape Rat?

James: Well those were the people who came to the Cape in the early days, and they had to live on the complexes almost. We had very little housing, we had no roads, we had no places to eat, we ate out of a trailers called the Roach Coaches. They would come around and blow their horn when it was time to eat, Many of us brown bagged. We were known as Cape Rats because we looked and acted the part of actually a rat. Even later on in the block houses we would get locked in for fifteen to twenty hours at a time with a bad
[00:09:00] missile, and we had frying pans and skillets and we would cook eggs and bacon inside the block house while we were locked in.

I remember one time we were locked in for twenty-four hours due to an explosion we had on the pad on complex thirty-seven. We ate everything in sight. We drank up all the coffee, we drank up all of the water, we had everything. Back in those days we didn't have any ladies restrooms and there were no ladies here either. There were all men and it was a very rugged life. The mosquitoes were so bad that you had to wear your sleeves down all day and all night. We had a tremendous amount of animals here. We had alligators, we had rattle snakes about six to ten feet long, we had all sorts of rats in the cable trenches. Just everything, wild pigs, wild deer. Many of the guys would bring their guns to work and would shoot ducks on the way home and would take home a half a
[00:10:00] dozen ducks at night. Some of the guys fished on their off hours out here. In fact, the fishing is still very good in the wildlife area.

Recently I understand they fired a guard who brought in his rod and reel and was out fishing in the wildlife area. Back in those days we could fish any time we pleased and the trout were very, very large and the duck. There was so many duck here that no one really paid any attention to seasons. They would kill have a dozen duck and go home and next day come back out and get a few more, whenever they needed the meat. We had carpools in those days too. Very few people drove their own vehicle. I remember I had a 1957 VW Volkswagen bus and I charged each guy $1 a week to ride in my bus. Gas was 24.9 a gallon and I got twenty-six miles to the gallon of fuel, so I made money for seven people in my Volkswagen bus charging $1 a person per week.

[00:11:00] We would all meet at the Titusville Causeway and their wives would bring them down. They'd get on my bus and we would head out. The hours were unbelievable, the number of hours that we worked. Sixty hour weeks were a normal workweek. When you launched, it was eighty to a hundred hours a week. You just worked twenty-four hours a day.

Nancy: Okay, cut. How's that last sound? You were saying that everybody rode out together. There must have been a kind of community spirit.

James: Oh absolutely. We had a community spirit amongst the missile workers at the Cape and there was another community spirit that was here on the beach side, on the west side of the river as we called it. We didn't associate too much with the people in town. You had the people were former fishermen, orange growers and people of that nature, primarily agricultural society where we were all technocrats. We were all engineers and technicians, and we were working on things that the community did not understand or

[00:12:00] even want to understand. In fact, they would have preferred us not be here. They looked upon us as outsiders and didn't accept us very readily at first. We had groups of people who had come in from all over the United States to work in the early days.

Even in the first two or three hundred people, there was still people from Pennsylvania, from army overhaul facilities, overall facilities, people from Pensacola Naval Air Station came in, people from Langley Air Force Base came in. There were people who were former technicians and military people, quite a few of them, had come in because they knew how to work with their hands. At the same time, the people in town did not fraternize with them very much, and we were not in town enough to get to know many of them personally. For instance, I never got to go to a bank because the banks were always closed when I got home and when I left. We had two children and my daughter used to call me her bye-bye. I would wake her up at 6:00 in the morning and say, "I'm getting ready to go to work, goodbye," and she'd say bye-bye.

[00:13:00] When I came home at night it was usually 9:00 or 10:00 at night and she was already in bed asleep. It was very, very difficult on the wives and on the husbands in those days. The divorce rate later on in the 60s during the Apollo program was absolutely horrendous because we were locked in and the other people and the families were locked out. I remember I had probably worked here at least ten years before my wife ever got to go to the Cape because what we were doing in the early days was top secret.

We were military, and it was handled in such a way civilians did not get on the base. There was several things that the Germans didn't like. They didn't like paperwork, they didn't like telephones and they didn't like women. We had no women, no telephones and no paperwork.

I remember one time the Germans decided that too much time was being lost on telephones, and they turned off all the telephones for a two year period between the Cape and Titusville and made it a long distance telephone call and you had to go to a
[00:14:00] pay telephone in order to call home or have anyone call you during the day. I sometimes wondered what would happen today in terms of efficiency if Kennedy Space Center cut all the phone lines going to the outside world and said everyone was going to concentrate on nothing but firing missiles. I feel like we would get a lot more work done today like we did then. They were very, very well disciplined and I think in the shuttle program, that's the thing that I miss the most was the fact that the German discipline was gone.

They treated us like soldiers. They treated us like workers, but they were very, very fair and there were Germans in every key managerial position. If you tried to go around the management, it never worked because you always ended up with a German who took you right back to Dr. Wernher von Braun and had straight lines of communications.
[00:15:00] After the Apollo program was over, one of the German scientists was deported because they found out in Peenemünde that he had killed about ten thousand slave laborers building the V2 rockets. I appeared before one of the committees because I had worked with him and they said, "Do you think that could be true?" My answer was yes because I was one of his slaves over here.

It happens that we put that guy in charge of the manufacturing of the Saturn Vs and he was in charge of manufacturing all the Saturn Vs from Huntsville and he had been charged with manufacturing of all the V2s for Germany.

Nancy: Who was this?

James: Well I don't want to mention his name because there's been a lot of controversy about it. He finally, he did leave the country and then the contention came whether he should collect a civil service retirement or not, and I think he did finally end up collecting his civil service retirement in Germany. It was very, very controversial on some of the things that happened. Also we did a lot of things in those days that today you could never do. We sent up many different payloads on V2 rockets that the world has never heard of, a
[00:16:00] lot of animals, a lot of live animals, and we did a lot of experimentation with various vehicles. We set up many radioactive devices on various missiles and things that today would be so controversial that you could never get it done.

I think that's why we made such rapid progress however in our missile program back in the late 50s and early 60s because it's very expedient. The chain of command was very short. Between myself and Dr. Wernher von Braun there's probably no more than four people ever. I don't care how big the organization got. That was true with most every other worker at the Cape. You felt like that you were totally in charge on a personal

responsibility basis of the system that you had, and that was actually true. They would let you have as many systems as you thought you could handle in terms of personal responsibility but there was no paperwork. I kept a diary and in my diary I annotated
[00:17:00] what I did each day and what my technicians did. Then before launch, the Germans would sit us down and would go over our diaries to see what the problems have been and what they were, and they would ask you, "Were you ready to launch?"

If the answer was yes, they would say fine and we'd go to the block house and they would ask you to raise your hand when you're ready to go, you raise your hand and we'd pick up a count for about thirty minutes and we launched. There was no countdown procedure. Everyone knew when their system was ready or not ready, and the only reason we had a countdown was so that the range could come in at the last thirty minutes and synchronize the radars and so forth with us. Up until that point we didn't need a countdown. The countdown was something that was for the outside world not for us. It was very, very exciting. There was some very truly colorful characters that worked with us in those days. A man's word was his everything, his honor. If you disputed what a guy had done, there were many fights. I've seen fights, myself included,
[00:18:00] down behind the racks in the blockhouse because I accused a guy of not doing his job right and he said if I was going to insist on doing that he was going to punch me in the nose.

We proceeded to scuffle and fight all over the floor of the blockhouse over an engineering point between myself and the technician as to whether that really was true or not. A man's word was everything. I look at it today, I don't think we take peoples word for anything today. If it doesn't have a piece of paper and nine technicians or nine QC stamps, it doesn't go, doesn't matter what a person says. I think in those days it was a lot of personal responsibility and that's why we accomplished so much with such a few number of people.

Nancy: I have heard that nobody wanted to be the one to say, "Don't go."

James: That's right. You would kill yourself getting your system ready. I happen to have some very critical circuits. I had what they call cutoff circuits. When you got down inside the last few seconds, you have circuits that monitor the vehicle and if something's wrong it
[00:19:00] shuts the vehicle down. Well I was told if you don't shut it down and it blows up, you're fired. If it's a false alarm and you shut it down and nothing's wrong you're fired. You were caught. I had a very difficult time finding technicians to work for me on some of those systems because they were very, very critical and took a tremendous amount of personal responsibility. Of course we built all the test equipment and all that equipment by hand, we designed it, built it and used it because you could not buy any launch equipment in the 50s and early 60s.

There were no companies, there were no aerospace companies that were selling such a thing. We uniquely designed everything that we needed. We checked it out on the static testing in Huntsville, then we brought it to the Cape and put it to use. Then later on in the program we began to get hints that we probably were going to have an Apollo program some day and we were going to send men into space, and we got to handle

[00:20:00] things a little differently, and we knew that the very small group of civil service people that we had could not handle that. We began to hire people. We brought Chrysler onboard. That's one of the first contractors. We brought McDonnell Douglas onboard in the Delta program as one of the first contractors. General Dynamics came onboard. Conveyor came onboard in the late 50s to go to work on the Atlas.

We began to increase the large number of people that later on caused us to have an Apollo program. I remember looking back on it. I asked them when we were in the Saturn 1B program I asked the Germans we started to plan for Saturn V and we were going build the VAB and they told me I had forty-two rooms to put all of our equipment in in the VAB. In my wildest imagination I could not figure out what anyone would do with forty-two rooms in the VAB. Of course look at the size of the building it turned out to be today. I was a little bit naive because two hundred of us were launching every six weeks on the Saturn I. We could put the same amount of weight into orbit as the space
[00:21:00] shuttle does with two hundred people every six weeks. The Russians built a similar vehicle called a Proton and that's what Norm Thagard just flew on recently. They're still using theirs, and we threw ours away.

This nation has always been very shortsighted on what to do with some of the best software that they ever had. We really need those Saturn IBs today, and we could be launching every six weeks off of three different pads putting payloads into orbit beyond imagination. Yet the United States has the tendency to throw away old things and invent new things. When we invented the shuttle, we invented a very complex vehicle, does a wonderful job, probably is one of the most marvelous machines on earth, but at the same time it's terribly expensive. The Russians on the other hand, they built a vehicle in the late 50s and early 60s and they're still using it today, and they can launch it as many times as twelve times a month. Their price is about $25 million per launch, where ours is $500 million per launch.

[00:22:00] Their vehicle could launch the entire space station for the same price as one shuttle launch here in the United States. This nation is losing out very quickly in its economic capability to provide launch vehicles into space.

Nancy: Let's go back a little bit. You mentioned the Russians. When you first got here, you're really working on IRBMs and ICBMs.

James: That's right.

Nancy: Now there was a space race even before the commitment to go to the moon between the launch vehicles of Russia and the ones here.

James: Well that's right. All the Germans did not come to the United States from Peenemünde. They split up into groups, and unfortunately some of the Germans went to Russia. We think we got the best ones with Dr. von Braun. Dr. von Braun pulled out of his teammates in Peenemünde and said, "I am going to try to get to the American lines, and how many people want to go with me?" About sixty people decided they would go with
[00:23:00] Dr. Wernher von Braun, but there were many more German scientists in those days that

were captured by the Russians that did not go with Dr. Wernher von Braun, and they were sent to Russia to help build the Russian Space Program or their military missiles. Of course von Braun came and very quickly the OSS rushed in and, like I said, seized about three hundred and fifty boxcar loads of missile parts and prints and documents, all of which went to White Sands out in New Mexico. Out of that they fired about seventy-two V2s altogether.

The Russians recognized the advantages of an ICBM and an IRBM just as much as they did in the United States. Those army people that were with von Braun of course were sent to White Sands as well, and I came from that group. Huntsville was primarily an army base. It was Red Stone Arsenal in those says, and what we were doing directly
[00:24:00] related to IRBMs. We fired many classified payloads, which I can't even talk about today. We had some payloads we flew out at Johnson Island in the Pacific, we had some we flew here, had some we flew in White Sands area. We were getting ready to distribute those missiles all over the world. We were sending those to Turkey over in the Mideast where they could reach Russia. Then we came up with the Jupiter, which was a little larger missile than the Red Stone, and it also was sent to Turkey and was stationed around the world so atomic warheads could reach Russia.

The Russians were doing the same thing. We came out with another missile called the Pershing, which was a very, very complex nice little missile, and we launched the first ones of those and then we turned all that over to the Martin Company. Martin has made millions of dollars on the Pershing. Recently in the START treaties they dismantled them all, but that was an absolutely beautiful little missile. One of the strange things
[00:25:00] that I remember was that we launched them successfully. We turned them over to Martin. They changed all the procedures and had about three or four of them blow up the very first time, and we said, "Look, go back and do them like we told you and you won't have that problem."

Nancy: What was the sense of the competition between, was there a concern that Russians might be spying on the work that was being done here?

James: Well they were. There's no doubt about it that there were many Russians in the United States, and many even Americans who wanted the pay of Russia. There are a lot of people that believe in socialism even to this good day, even though communism has fallen. They felt like the Russians political system may be better than ours, in a lot of respects. There were spies around. The launch dates were very carefully guarded. Even our wives and families did not know what we were doing. My wife didn't find out what I was doing for probably the first ten years. I never talked about launch dates, I never
[00:26:00] talked about payloads. Even my son who's now twenty-five, twenty-six, only recently found out some of the things that I was doing and he was dumbfounded about some of the aspects of some of them because some of them have been declassified.

We were not allowed to even talk about it. The wives usually got the hint that we were getting ready to launch when we were gone for about twenty-four hours and never showed up. Then something would happen and we'd come home, and we'd say we got to go right back in eight hours from now, we'd go to sleep and get right back up and go

right back in for another twenty hours. They knew we probably had scrubbed that we had a real bad problem. We were very, very quiet about it. They did not talk about their work. My wife had no idea what I did or what was going on. Probably some of the people did, but in general it was a very secretive affair, and we all had top secret classifications. I remember that I got into trouble with the Secret Service one time that I was working on a payload, very top secret nuclear arming device, on the Red Stones, on the Jupiter.

[00:27:00] I went to Huntsville, Alabama to do some work in the laboratory on it, and I was getting ready to bring it back down here and install it on the missile. Well I had about four or five badges. We had tremendous badging systems and when I went into the facility in Huntsville, I had to go through all these checks, you had to go through about a half a dozen people. The last check that you had to go through, they had to put your name and your birth date down. I put my name and birth date down, and I'd been in there working on this device a couple hours when a few soldiers showed up and they escorted me out the door and said, "Come with us." I said, "What for?" They said, "We're not going to tell you. Just come with us peacefully or we'll have to use force."

I went out into a trailer, and they had several stenographers there and a bunch of Secret Service there and armed people there. They asked me, "Who are you?" I said, "Well my name's Jim Mizell," and they said, "Okay, that's fine. Where were you born," and I told
[00:28:00] them, born in Sardis, Mississippi. "Well who were your parents?" Told them that. They went through my entire life, and finally they said, "We still want to know who you are." This was about two hours later, but they never would tell me what they were getting at. Well lo and behold, I had done something that they really did not like and something that was on this last check. When I went in the Navy back in 1950, I enrolled in Mississippi and I was sent to New Orleans for examination. I got to New Orleans and found out there as a foul up in my birth certificate, that I was born on October the 5th, 1930, and my birth certificate said October the 6th, 1930.

Well in the Navy they told me that I had to go back home and reenlist and start all over again if I was insistent that the 6th was not my birthday. I said, "Forget it. It doesn't
[00:29:00] make any difference. I'll always use the 6th from now on." Well in my records it has shown up as the 6th of October all the way through. Well when I went through the last check into the nuclear area I had put out October the 5th. Lo and behold, they had come to get me because after about three hours of grilling they finally told me what was wrong, and I told them why I had put October the 5th, and they said, "Well that's one thing that no one misses is their birthday, and we just knew that you were not who you said you were." That's how tight things really were.

It was very exciting work. I look back on the time. People today don't have nearly as much fun working in the space program as we did because if we couldn't buy something, we built it. If we couldn't build it we would do something else. We worked on all aspects of the program. It was hands-on all the way from the payloads to the
[00:30:00] engines. The Germans were very thorough in cross training in those days since we had so few number of people. I would work on everything in the nose cone section for one missile, then next month I'd work on the body of it. Then the next month I'd work on the

engines. Then the next month I'd go work on the static test stand. By the time I had gone through about a hundred missiles, we worked on all of it. They had another philosophy that was very good, is that when we launched you didn't go home until you looked at all the data. You looked at all the data and everyone looked at every measurement all the way from the nose cone to the tail section.

If you saw something that looked strange in someone else's system, you said so. You really got a tremendous education at the same time that you were launching missiles.

Nancy: [00:31:00] This is the Brevard County Historical Commission oral history video project, an interview with James Mizell, Titusville, Florida, March 27, 1995. Interviewer Nancy Yasecko. Cameraman Robert Gilbert. Camera Sony DXC M7. Recorder Sony BVW-35. Copyright Brevard County Historical Commission, 1995.

Robert: Rolling.

Nancy: Tell me a little bit about the Germans and what was their social life like?

James: When I first met the Germans, of course they had come across from Peenemünde and they had about sixty-five of them and they were actually prisoners of war. They were isolated out in barracks out at White Sands, and the only people that really fraternized with the Germans were the army OSS people that captured them in Peenemünde. In fact, Dr. Wernher von Braun insisted that this young army captain be his personal man after this young captain brought him through the lines in World War II. Those people [00:32:00] had retired from the army, and all of them were working in Red Stone Arsenal naturally because the Germans liked them, they trusted them and they put them in very important positions.

About once a month the Germans would hold a meeting where only those people who were true Germans could attend, and they would get their marching instructions from Dr. Wernher von Braun, who they called Professor von Braun. Professor has a higher title than doctor in Germany. Professor means not only a doctor but a person who's a teacher and is a little more revered. They actually revered him as the person that they owe their lives to. Dr. Hans Gruene was my direct boss and he was in charge of electronics and electrical engineering on the V2 rocket program. He credited Dr. Wernher von Braun with saving his life in World War II, that as a young man he had just gotten his doctorate degree in electrical engineering from the University of Darmstadt [00:32:56] in Germany.

[00:33:00] They had assigned him to the submarine corp. He was very much afraid of submarines, and of course they were losing quite a few submarines up in the North Seas in those days. He wrote a letter to a friend who recommended him to Dr. Wernher von Braun for missile work. He already had his clothes onboard the submarine and the submarine was getting ready to leave, and at the last minute the message came, it says, "Dr. Hans Gruene, report to Peenemünde to Dr. von Braun. He was jerked off the submarine. That submarine was destroyed and never returned to Germany. He felt he owed his life from the very beginning in the early parts of World War II to Dr. Wernher von Braun. In

Peenemünde he showed me pictures of the dormitory and his office in Peenemünde and pictures of his roommate, another young doctor there.

That building had been destroyed in the latter part of World War II by the allied bombs. Dr. Gruene was in the blockhouse launching V2s and his roommate was back in the
[00:34:00] dorm, and the dormitory was destroyed and his roommate was killed. That's typical of the way that Dr. von Braun led this group, small band of Germans out of Germany, out of the war situation into a situation of going out to space, which he had always divisioned ever since about 1936 as something that he would like to do. They knew mathematically it was possible. All they needed was the energy source and the resources, the money to get it done. Dr. von Braun had always felt the United States had more resources than anyone else, and that's why he opted to come in the United States and to turn his approach more towards science, research and development than towards war.

I think that those Germans being in wartime basis was merely expedient that he would have done the same thing regardless in order to further his interest in space. The Germans, like I said, were very much disciplinarians. When they came into the room
[00:35:00] with each other, they clicked their heels, actually almost saluted. I had one real advantage over a lot of the Americans. I had majored in chemical engineering originally at Mississippi State and then had a further degree in electrical engineering, and I had learned to speak German, I had four semesters of German, so I could speak German pretty well. I understood them and they understood me. I was very well aware of their classic backgrounds and the way they thought.

They ran our group like a military group. There were just many, many interesting things that they did. I remember that they did not allow pinup pictures for instance anywhere around, and I was reprimanded several times because some of my technicians would have pinup pictures in the work area around the complex and they would come to me and says, "Either tell them to take those pictures down or they're fired." Then they would get very difficult on music. They were very careful about music. We will have no
[00:36:00] music in the working areas. Take that FM station out of the support building or you're fired. They did have the right to actually fire and hire immediately on the spot. We had one Jupiter that went down range and came in early, and one of the engineers, we tracked it down to a particular cable bundle, in that cable, something was wrong.

One of the technicians says, "I was told to leave that cable unhooked by the engineer," and the engineer says, "That's not true. I did not tell you to do that." In fact, he says, "I checked those cables and they were hooked up when we were launched. Well Dr. von Braun and Dr. [Debus 00:36:35] turned to the range commander and says, "Can you find that missile down in the South Atlantic" and the answer is, "Yes, we know where it went in." "Go down and bring it back." I remember the day they brought it back and they assembled it in the hangar and they brought all us out there and we stood at attention. They gave the technician the screwdriver and said, "Show me the cable." The technician went up and he unscrewed the side of the missile, opened it up and the cable was hanging loose.

[00:37:00] He turned to the engineer and he says, "You will never again work on another piece of flight hardware as long as we're in the program," and that was true. That engineer was banished and he never again worked on anything in the missile business. We had another technician that was a good friend of mine that he had a choice of two cables to hook up. In those days we didn't have cable markers on the cable. We had no quality, no safety and no reliability. Well he made a bad choice. He guessed. We were told that it was nothing wrong with not knowing something, it was only wrong to make a mistake. Instead of asking someone, he made a mistake. He guessed. Well he plugged in the cable and it burned the cable all the way from the blockhouse to the missile.

He was immediately told he would never work on missiles again, and one day I was very shorthanded and we just didn't have enough people to do work. This guy was a wonderful technician and he had been relegated to making coffee is his only job back
[00:38:00] over in the coffee shack. I went to him and I said, "Look, this is criminal you sitting here doing nothing with your cable ability." I went to my boss, Dr. Hans Gruene and said, "I want to use this guy. I need more help." He said no. A couple of days later I went back to him again and I said, "Look, this guy is great. He's a great technician. I need more help." He said, "I'll tell you what Jim. I will let you use that guy but if he makes a mistake you get fired. Do you understand?" I said, "Yes I do." I went to the guy and I told him, I said, "I have made a pact with the Germans that I'm going to put you back to work, but if you make a mistake I get fired."

I said, "You know, you have been relegated to this job not to ever work again," and he says, "I realize that." I said, "I'm going to take a chance on you. I need help badly." Well tears rolled down his cheeks and he was impressed. Well that guy turned out to be one
[00:39:00] of the greatest technicians that we ever had, but the Germans were not willing to take a chance on anybody who made a mistake once. Even later on in the program, after we got up into the Saturn program, they trusted us guys who had been in the program early, just like they trusted their army people who had captured them. When someone says something was wrong with the Saturn V, they would look at the guy and if he wasn't on the original team, they would say, "Fine," and then they would pick up the phone and they would call one of us and say, "Would you go check that problem and make sure that it's a problem."

We would go check. If it was a problem, we'd call them back and they'd say, "Fine," but they had that cadre of people that they had their trust in. They did not trust anyone else. Later on in the program I had a NASA guy that was a brilliant man who was hired above me that came into the organization. I was invited to the staff meetings, he was not. After he'd been there about a year and a half, he came in one day and this memo
[00:40:00] came in from the director and it came and it put to my attention and he opened it and looked at it. He said, "You're working for me? Why didn't I get this memo?" He says, "How long do you have to be in this outfit before the Germans will accept you as a team member?" I answered, I said they never were going to accept him as a team member. It reminded me very much of the old south and the good ole boy days.

You had a set of good ole boys, good ole engineers, and to this good day those are the engineers that are in favor in the program. I don't care how brave a guy is or where he

comes from, he's an outsider when he comes in. I remember when Grumman came in from Long Island for instance. The president of Grumman after he'd been here a while he says, "What is going on? There are nothing but good ole southerners and Germans in
[00:41:00] this entire place. Everyone is from the south. This can't be." Well we all just kind of smiled and went on.

Let me tell you, later on in the program Grumman got in trouble and the rendezvous radar was not working properly on the Lunar Excursion module. When we got out to Apollo 8 we were getting ready to go have a link up with the Lunar Excursion module for the first time, they were not ready. We decided instead at Thanksgiving to go around the moon on Christmas, which was kind of a shock to all of us. At that time Grumman realized they were in serious trouble, that they obviously could not make the limb work properly. They came to us and said, "We need help." We said, "Well tell you what, we will give you a young guy as your chief engineer, and he's working for NASA at the
[00:42:00] present time, but we're going to let him go to Grumman and become a Grummanite to help you with your problem." They said, "Well that's not going to do any good."

We said, "Oh yes, you just listen to what this guy has to say and he will solve your problems." We gave them a younger guy from Georgia, he graduated Georgia Tech, he was smart as he can be. He went over into Grumman and he cleaned house. He actually saved the Lunar Excursion module program. He solved all their problems. He was very, very tough, he's very sharp. When Grumman was laid off in 1972 and 1973 from the lunar program, he came back to work for NASA. We hired him back. During that time he had become very familiar with the president of Grumman and everyone else. After he retired from NASA, he went back and became vice president of Grumman and then recently he retired from Grumman and Fred Hayes, the astronaut, took his place.

[00:43:00] The guy had saved Grumman a lot of trouble in the Apollo program, and he was given to Grumman specifically because of the work he could do, and he happened to be one of the good ole southern boys and a Georgia Tech Graduate and all those things that the president of Grumman said he did not understand how these people got these jobs. If you look today, you'll notice throughout the program between Langley and the Man Space side and between Huntsville, Alabama and the launch vehicle side, a large majority of all the directors and managers have been southerners for the last forty years. It's kind of an interesting facet that you don't see in history books much.

Nancy: That explains something because I had noticed that, but I didn't quite understand where it came from. Now there was quite a bit of danger associated with a lot of these jobs, not just for the astronauts but for the people on the ground.

[00:44:00]

James: Oh yes. We had no safety and no reliability. It was purely a personal care on your part as to whether ...

Nancy: Let’s hang on just a second…[00:44:06].

James: We're going to have to wait on that plane. In the early days at the Cape there really was

no safety and no reliability. You had to look out for yourself. It was very similar to a military operation. As I mentioned, we were all former military pilots and military people, so it was very similar to being on an outpost in the Pacific somewhere. You had to watch out for yourself. We knew where the dangers were, and probably we knew where the dangers were better than anyone else who we could have hired to come in and told us what to do. We were working with cryogenics. We were working with very exotic propellants like hypergols and alcohol, and we were very familiar, we had a lot of fires around the pad. We brought in liquid hydrogen technology for the first time in the
[00:45:00] United States. We had no hazardous gas detection systems.

We designed some systems. One of the systems that I designed is still a prototype for the systems they're using on the space shuttle today, was a hazardous gas mass spectrometer system. We set down and took x-ray tubes and made our own system so that there was nothing we could buy that would do the job. I designed a very elaborate fire detection system to put onboard the spacecraft, onboard the missiles, there were no onboard fire detection systems early on.

Also we had problems with vibration shaking many of the missiles to pieces, and I designed a vibration system that would shut the engines down prior to liftoff in case one of the engines started running rough before liftoff. We'd had many cases where these engines would run rough. You'd try to shut them down and just blow all the pieces. We knew that we were getting into the man-rated program we could not do those sort of
[00:46:00] things. We sat down and designed safety devices ourselves, and put limitations upon ourselves, but there are many, many times when some very unusual things happened. One of the unusual systems that we had, there's a vent valve that vented the liquid hydrogen tank and we had no sensors to tell whether there was a fire there or not because when liquid hydrogen or gaseous hydrogen burns, it's absolutely clear.

Well we had a guy take a boom and every time you'd pass it, they wiped the broom by the end of the vent. If you burned the end of the broom off, then there was a fire. Otherwise there wasn't and you could walk on by. I remember one night on one of the complexes, they had been loading hypergols on the spacecraft. As I was coming down I was standing in puddles of hypergol and we said, "What happened?" The guys thought they had an empty line and they had dumped about five gallons of hypergol over the side of the spacecraft. It had drained all the way to the ground and at two AM in the
[00:47:00] morning I'm out there walking in it. Today there'd be no one within five miles of the place.

I walked down to the blockhouse and said, "Look, call those guys and tell them to quit doing that, okay?" They did. We had to de-stack the missile because the hypergol had taken the paint off all the way down, gotten in all of the seams of the missile, so we had to de-stack it. I worked on experimental hydrogen systems.

Nancy: Hang on a second.

James: Yeah, everybody seems to be using the grass strip. There were many different times that we did things that we would not be allowed to do things today. For instance, at thirty

minutes prior to launch the missile, myself and a technician would go out and take a hammer and crawl up in the bottom of the booster and would pound on all of the accelerometers because they measured about sixty Gs of acceleration at liftoff, and we would pound on these accelerometers and the techs back in the blockhouse would see all the recorders move. We would button the bottom up. It'd be about T-minus fifteen
[00:48:00] minutes and counting with everything loaded and we would walk back to the blockhouse because the blockhouses were only about five hundred to a thousand feet away.

We did that for every launch. Sometimes it would be oxygen leaks, locks leaks. While we're out there, the line would let go and the spray would go over the side and we'd say, "Call some guys out here." What we would do to cure those leaks, we had ladies sanitary napkins and we would cut off the locks flow, wrap the leak with the sanitary napkin, wet it down with water and it would freeze like a band-aid and then we would go on with our work and they would continue loading. Those were the kind of things that we did. We didn't pay much attention to that. I remember on one of the Red Stone launches, we had two guys at the pad at fifteen minutes and counting, and we said come on back, it's time to close the blockhouse doors and go. They both came back to the blockhouse. The blockhouse on the Red Stone was very small.

[00:49:00] One ran around one side of the blockhouse and the other one ran around the other side, and they were looking back at the pad, and they ran head on and knocked each other out and they were lying unconscious at the door. At T-minus five minutes they had not gotten back in the blockhouse, so someone went out there and they were lying there. They drug them through the door, closed the door and we launched. Today those kind of things never would happen.

When I worked on this special hydrogen loading system, we would take a thousand gallons of liquid hydrogen and put it in a big vat, put it on a loading scale, a weight scale, and I put a bunch of loading systems in the tank and I walked around on top of the tank looking over in this tank of boiling hydrogen while I was working there. I did this for many days. It was on an Indian reservation in Tulalip, Washington north of Seattle back out in the big rain forest. No cigarettes were allowed within two miles and no
[00:50:00] automobiles within two miles, and we were working out there in a liquid hydrogen environment with Lyme and spikes on our shoes with the grounding wires looking over in the tank putting all these various pieces in the tank.

Several of my friends worked on the atomic power systems out of Jackass Flats and they worked with atomic energy the same way. They had automatic railroad cars that would take the atomic reactor out, fire off the rocket engine and the railroad car would come back automatically. Several times the car would stop out there and wouldn't come back. They would just merely walk out there, start up the little train and bring it back with an atomic engine hanging on the front end of it. We did a lot of work in those days, and it's very similar to the military. In the military we did the same thing.

Nancy:
[00:51:00] There was a sense of you got to hurry. There wasn't time to think twice I guess. It was a funny sort of period. You were racing the Russians either for ICBMs or IRBMs or then for

the manned.

James: That's right, but you see we grew up in a hurry up society. We had come through World War II. We had come through the Korean War. We had very tight schedules. We understood hard work, hard discipline and doing things in the least amount of time. That's one of the problems I think today is that people seem to think that they need time to spend it on their own things rather than on the program. In the early 60s, when we decided to go to the moon, when John F. Kennedy decided to go to the moon, we realized we only had engineers. We had guys with Master's degrees and PhDs and engineering, no managers. We imported a manager from the National Institute of Health to come down, Al Sebert to be Dr. Debus' deputy. He was the only manager on the entire launch operation center in those days.

[00:52:00] He told Dr. Debus, he said, "We're getting ready to undergo a big program. There is not a single manager on this center." We all looked around and said, "That's true." He says, "I want to start a Master's program right away and I want to import some professors from all over the world to teach some of our top people how to manage." Dr. Debus said, "Fine." In 1964 they picked twenty-two people at the center, engineers. I was one of the first twenty-two. They sent us to school at five AM every morning until nine AM every morning, and then we worked sixty to eighty hours a week while we were getting our Master's degree. At the end of two years we received an MBA in Research and Development Management. We came out of the Research and Development Management school in about '65, '66 just in time to pick up the big contract impetus that came along then.

[00:53:00] I asked Dr. Debus and the Germans, I said, "You know there are only about three hundred of us at this point. How many people do think we're going to have doing Apollo at Kennedy Space Center?" He said the ratio will be ten to one. Well sure enough at the height of the program it was about twenty-two to twenty-three thousand people that we were managing. They actually went out and put us in special schools to train us to become managers as well as engineers. We really had the advantage on the contractors because we had all the hands on experience that you could possibly find and then we were sent to management school. One of my professors in labor relations today is a very prominent man. He was a man who was an enemy of the government in 1964. One of the greatest labor relation leaders in union history, and they decided to hire him to teach us labor relationships.

[00:54:00] He came down, he taught us labor relations and about five years later he became Secretary of Labor for the United States. It was Bill Usery who was recently called in to arbitrate the baseball strike. He was my professor in labor relations at Kennedy Space Center. They would bring them down. Actually it was Cape Canaveral because Kennedy Space Center wasn't here at the time, it was Cape Canaveral. He would come down and he would teach us every day for six weeks and he would go back and do his job, then come back in and do the same thing again. We received very highly concentrated courses on how to manage. We had some very interesting things. Probably no other program has ever been run like the program has been here. Where everyone went from pure engineering, pure technician work to pure management and engineering and

technician work.

Nancy: This program also developed the whole idea of the systems.

James: Oh yes. Apollo get a tremendous amount of publicity for the technical spinoffs that occurred during the Apollo program, but the managerial spinoffs like PERT studies and time and motion studies, and the things that we did to manage hundreds of thousands of people, they were going to bring everything down to Kennedy Space Center,
[00:55:00] assemble it, have it all fit and have it launched on schedule was a mammoth undertaking. We were used as an example for many other different agencies within the government, but I remember that we could not quite do that in OEO, the officer economic opportunity. The social agencies tried and tried and tried to do what NASA did and I think NASA has been and still is a very unique agency. I think the uniqueness is wearing off because the Germans are gone, number one. Number two, I think we imported too many people from the social agencies over into NASA and they brought all their rules with them when they came. That's one of the big problems.

We were an autonomous agency that no one infiltrated our ranks. In other words, no one was in any position unless they were a bonafide engineer plus had the other qualification. Today we have math majors that are substituting for engineers. We have
[00:56:00] all different types of people. It's a real smorgasbord of people who are in very important positions in NASA who don't really have the background to be in a very highly technical agency. We lost all of that when the Germans died because the Germans really specifically made sure that every key position was an engineer first, manager second and was very highly qualified and followed instructions third. Today that is not the situation in any government agency that I know of.

We came along at a time when we were allowed to do something in the government that was a brand new idea, and we may never be allowed to do it again.

Nancy: I think it was a one time shot there.

James: The other thing is that I think our goals and the agency goals were one and the same. We were almost merciless in the amount of discipline we required out of our people and what was required out of us. I remember when I was in our management school, one of the ploys that we would use to find out whether a guy was really working up to
[00:57:00] the top of his talent or not, we were told to visit the homes of our workers. If they had a hobby, to give them more work to do. They did not have time to have hobbies at home and we would not see to that, that if they were working twelve hours and they had a hobby like boating or flying or whatever, give them fourteen hours of work to do. We were looking very much to see that we were maximizing the capability of each and every individual.

Nancy: Y'all worked hard but there was some hard playing that went on too.

James: There was some hard playing, and that's where the big divorce rates came in. After every launch, we had a launch party. We had more people killed after the launch parties

[00:58:00] than we ever did in terms of safety on the pad. We had car wrecks. It was really bad. I remember that we had a coffee mess in the blockhouse, and we would drink coffee twenty-four hours a day and the coffee was a nickel a cup. What they did, they took all this coffee money and after every launch we'd have a party.

Nancy: Hang on a second, let this guy go. Just keep rolling.

James: You might be able to use some of this as sound effects.

Nancy: I might have to shoot some of those. There would be after each launch?

James: After each launch there would be a launch party. We would rent out the entire officers club at Patrick Air Force Base. We would come out to a park and just have an entire party, but there were a lot of people killed going home. There was an unlimited flow of alcohol. There was a release of a lot of pent-up emotions that the people had worked hours and hours and days and days, and it was successful and now they were going to celebrate, but two days later we were right back to work again, twelve to fourteen hours a day, same way.

[00:59:00] I remember when I came out of launch vehicle operations and went into a management job during Apollo, they decided to disband the coffee mess because it was at a time when we were getting in contractors and it was a lot of discussion about whether the contractors should be invited to the parties or whether it was just us, the government workers. They decided they would have a going away party for me at Patrick Air Force Base, and I was one of the first guys to move up into management in the Apollo program out of launch vehicle operations. We rented out Patrick Air Force Club. I think we had like $2,500 we were going to spend, and they said we were going to drink champagne until we spent $2,500. There were about fifty people there, maybe sixty people. Obviously about twelve to fifteen hours later we still had money left over. All the champagne was gone that they had in their stock and everyone was partying all night long. It was very, very wild.

[01:00:00] I remember one time we held a launch party at the bowling lanes, the Shore Lanes down in Satellite Beach when it was first built, and of course we lived in Titusville so we carpooled. There was six of us in the car. We left about 3:30 or 4:00 in the morning out of Satellite Beach trying to get back to Titusville after partying. They had a drive-in movie theater on Merritt Island in those days, and by that time of course the theater was closed. We were all asleep in the car except the driver, and he felt he could drive no further, so he pulled into the drive-in theater and went to sleep. We all woke up at 10:00 the next day in this drive-in movie not knowing where we were or how we got there, and all of our families were looking for us. The workers were looking for us, and here we were inside this drive-in movie on Merritt Island, no one knowing how we got there.

You could see we could just as all easily been killed because in those days there were two lanes roads on 520, old bridges. The infrastructure in Brevard County was nonexistent. We did party very hard in those days. Of course that led to a lot of divorce.

I remember later on in the program one time, I counted, another guy and I counted,
[01:01:00] seventy-five people out of our offices had divorces. Seventy-five, and that didn't include just the men but that was the ladies also.

Nancy: Out of how many?

James: Out of about a hundred and twenty-five. Some of our friends, we sit down and reminisce now and the guys that started in the early days, probably on two hands are the ones that have the same wives and the same families. The tensions were just so tight. The workers were locked in and the families were locked out. We had two ways to get out. We could go out the south gate if we lived up here and do what we wanted to and come back in, or you could come out to the north gate if you lived down south and no one knew what you were doing in the north side.

Nancy: Brevard County Historical Commission oral history video project, interview with James Mizell, Titusville, Florida, March 27, 1995. Interviewer Nancy Yasecko. Cameraman
[01:02:00] Robert Gilbert. Camera Sony DXC M7. Recorder Sony BVW-35. Copyright Brevard County Historical Commission, 1995. All the stress of working out at the Cape must have had some physical and mental effect on the guys out there.

James: Absolutely. In those days we didn't have any mental health counseling as we do today, no psychological training. Most of us came out of the service and had very thick skin. We had been through boot camps. We had been through all sorts of war, and it was very, very harsh environment where we had been. That meant that we were rather tough on others as well as ourselves. It was looked upon as a sign of weakness not to be able to work the maximum number of hours and to handle the most stressful situations. There
[01:03:00] was no such thing as that you couldn't do something. That was one reason the program was successful because the people devoted one hundred and ten percent of their mind and their ability on the problems that existed.

We would never say that we couldn't do something. That was impossible. You could do anything if you put your mind to it. Early in the program, when I got here, I noticed that certain people began to get burned out and they would leave the program. They would be told to leave the program. They would go, they would get where they just couldn't handle the hours, they couldn't handle the stress. They would get into fights. They would break up with their families. They would turn to alcoholism. Alcoholism was very, very prevalent. People were very much depressed, especially those that couldn't perform to the same level of the ones who were outstanding.

One time I wanted to award this one guy an outstanding achievement award and the Germans came to me and said, "Look Jim, we can't give anyone an outstanding achievement award. If you were not outstanding you wouldn't be here. Because if you
[01:04:00] know of someone that's not outstanding, we want you to get rid of him." Like I said, it was very easy to fire. You just took their badge and called the guard, they would take them to the gate and that was it. I remember I hired people, I would hire two people and I would fire one. Then I would hire two more people and I would fire one, until I worked myself down to a cadre of people that were all excellent. This went on for years.

We had several cases where guys had come out of World War II, and they had gone back on the GI bill and the engineering, and basically they were a little bit off in some cases because they had gone through a very difficult wartime. I remember one of the guys had a mental breakdown and while he was in the insane asylum, he got a promotion and he came back out of the asylum and went back to work and eventually retired. He was a director at one of the programs, so we had to put up with that guy all the time. I remember one thing that he did that I'll never forget, we had a bad piece of
[01:05:00] telemetry equipment that was a big piece of electronics piece of equipment onboard one of the missiles and the technician was working on it, and he came in and he says, "I want you to send this equipment to salvage and get a new piece."

The technician said, "No, I can fix it." He said, "No, I said throw it away and get another piece." Well he left and the technician fixed it while he was gone. He came back and he said, "What's this piece of equipment doing here." The technician says, "It's fixed." He looked him in the eye and he picked that piece of equipment up and he opened up the window and threw it out the second story window, and the technician grabbed him and threw him out the window and held onto him and he says, "If you ever touch a piece of my equipment again I will kill you. Do you understand?" The guy finally said yes. He hauled him back in, and they both were crazy.

This went on. I have another case where one of our workers on Apollo was caught out
[01:06:00] working on the missile unauthorized on a Saturn V going to the moon at 3:00 in the morning, and he was making some very, very critical changes to the missile. When I came in to work at six AM, the German that was in charge of me called me down to his office and he said, "Do you know this guy?" I said yes. He says, "Okay, what I'm going to do is I'm going to have that guy assigned to you personally until we can give him a mental discharge and you're not to let him out of your sight for the next three months." I said, "Do what?" He said, "He's going to be sitting in your office. We're going to move him to your office, and you will watch him night and day for the next three months until we can get him out of here, but he is your personal responsibility that if anything happens to him, he does anything wrong, it's your responsibility."

The guy had severe migraine headaches, and he would get into these headache
[01:07:00] situations under stress, he would begin to have delusions. I ask him, I said, "What were you doing there?" Well he says, "I was at home and I got one of my headaches, and I thought that we had that system set wrong for the mission. At 2:00 in the morning, I got up and I came back out and I was setting it right prior to liftoff." I thought, "My gosh, I am going to be sitting with this guy for the next three months because he's my personal responsibility now." The Germans, like I said, had certain people that they trusted. If they trusted you they would give you jobs like that. Didn't have anything to do with your regular work. I was a supervisor for many other people, but I had to watch this guy very carefully.

The strangest thing is he got his discharge from NASA, went back to University of Florida and got his PhD in electrical engineering. You look at it, it was unreal some of the things that happened mentally to the people.

[01:08:00]

Nancy: Do you think that it was just the stress of the program, it was just too much responsibility?

James: Yes. We had people just would go right off the deep end. Some people would just disappear. We had some suicides committed. Even today, the stress is very great. Some people cannot handle as much stress as we had then. Some people can't take the stress that we have today. Even in the shuttle program, but we do have mental health counseling now that when a person feels down and depressed, they can go to sick bay or to the clinic and they will counsel them and they will pull him off and give him another job. In those days we had no one to take their place.

Nancy: I've also heard that there were a lot of heart attacks.

James: A lot of heart attacks. A lot of high blood pressures. High blood pressure came first and no one paid any attention to that. We have people in key positions of NASA today that have very, very high hypertension. You can imagine if you're in a key position with
[01:09:00] people's lives depending on it, and so they're under very heavy medication but they're still staying with the program anyway because they love the program and love the work so much. Many of my friends are dying now, as I mentioned before, some of it isn't where you die then but you die now at an early age. We have an old timer's group that meets every first Tuesday of every month and at that time we usually sit down and decide who has died in the last three weeks since the last time we met.

I've had friends, two people who died in the last week. Both of them had hypertension. Another guy called me today, had high hypertension. That's one of the reasons why I recommend that a person, if he has another life, to retire early from the program rather than waiting until late. I have a friend that has forty-three years in right now that was declared terminally ill this week, and he had not retired. You look, and I always felt there
[01:10:00] was another world someplace other than at the Space Center, but there are a lot of people that don't feel that way. A lot of people are working, going on thirty and forty years when they could retire and have a wonderful life, the rest of their lives, but they choose to spend every minute right out there.

I've had people who would die on the job out there and tell me, "I will never go home. This is where my life is." Just that statement alone says a person is rather susceptible to a mental problem if they think that their entire world is nothing but Kennedy Space Center. When I retired, I decided that every year I would take a community job and a church job every year after I retired, and I've done that. It's been very rewarding. I have outside businesses, and I've always recognized that even though I love the space program, that there really was another world other than working on space. I tell you the unfortunate thing is that we can't get our young people today, many of them to go and devote themselves to the space program the way we did. We came through a different
[01:11:00] generation. We were Depression babies, came through two world wars more or less, maybe three kind of.

We believe in doing what we want to do and doing the best we can do with a lot of discipline. I don't see that discipline floating around much out in society. It's there, but gosh, it's very hard to corral and get together. Lifestyle, the quality of lifestyle is the key note today. Our lifestyle was zero away from the Space Center. Our goals and the Space Center's goals had to be the same in those days or we wouldn't have survived.

Nancy: Talking a little bit about lifestyles of that time, you did get a few days off. What kind of things would you do with your family for fun?

James: You can see I flew and we boated and we camped. I usually tried to get away to where there wasn't a telephone. Florid happened to be absolutely beautiful back in the 50s

[01:12:00] and 60s for boating. I had a twenty-four foot cabin cruiser, it was trailable, and I would go over into the central part of the state and cruise the Kissimmee River all the way down to Okeechobee and back or I would go up into Lake Harris, I'd go up to Ocklawaha River, and in those days you could right up into Silver Springs, spend the weekend with your boat, actually go swimming in Silver Springs. It was just a city park. The fishing up in Lake George and Silver Glen Run and Salt Springs. Florida is one of the most beautiful states in the nation as far as natural resources are concerned.

Today they've got them all boxed off and fenced off and admissions. Deleon Springs, for instance, we got off over the weekend, we would leave on Friday afternoon, go up into the springs, spend the night in the springs in the dark, then go out and they had an old mill there that you could serve your own pancakes, they would sell you batter. You got off your boat, pour your own pancakes, have breakfast and then go on up the St. Johns River up into Lake George the next day. This area was absolutely beautiful.

[01:13:00] Another thing as hunting and fishing. I used to be able to go out into the Indian River at night with my boat. I could catch fifty-five gallons of shrimp in about five hours by getting up here on the good moonlit nights. I had my boat rigged with catalytic heater and a portable TV set, and we would bring cookies and food and we would just dip up the most beautiful shrimp you'd seen in your life. No limits, nothing. Duck hunting, fishing, absolutely the same way. Florida was really a beautiful wildlife place for people who liked to hunt. Coming out of the south, all of us guys were hunters and fishermen and it very much appealed to us down here. We always had a few VFW clubs. We didn't have many officers clubs, but a lot of VFWs and Elk Clubs and things like that. A lot of guys spent their time there.

We also had wonderful churches. This is in a bible belt still, and a lot of our time was spent with our churches and working with some of the people in the community. I don't

[01:14:00] think that my marriage would have survived had it not been for my close church ties. My wife and I have thought it over many times, that the people that really floundered were those that were living strictly in a worldly like way. They were making tremendous amount of overtime money and they were blowing it on crazy things. They were partying, every time they got a chance they were partying and alcoholism took over. I think the churches, the people that stayed together were primarily church families. That's true today. I look at the ones that are still together after forty years and it's a church group type deal.

Nancy: Did the churches include the old timers that were here and the newcomers?

James: Yes.

Nancy: Was that a place that they got together?

James: Yes, they got together but the funny thing was that the newcomers, since we were all engineers and very fast working and everything, we kind of drove some of the old timers out of church. I remember in the First Baptist church in Titusville they had a guy named Dr. Harden who grew up in Mississippi and he was a graduate of Mississippi College. As a matter of fact, he was roommates with my great-uncle in Mississippi. Well my church
[01:15:00] had about three hundred people but they happened to have a lot of money. They were very conservative. They had saved up about $100,000, which was a lot of money in those says. Well the church had three hundred members. A year from then it had four hundred. The next year it had six hundred. The next year it had seven hundred.

We started having two services. Dr. Hardin was seventy-five years old. He says, "I don't like all this." We said, "Okay, let's go out and build a new church." He says, "I don't want to build a new church. I'm too old." We said, "Well get out of the way. We will build a new church." We set up a building committee, and he says, "You can't use our $75,000," and we said, "Oh yes we can. We are the church members." We voted and we outvoted the old timers, and went out and started Park Avenue Baptist Church which today has two thousand members sitting out here out in Titusville. We moved out there, hired a new preacher. Dr. Harden quit and the new preacher preached both places. A young
[01:16:00] man our age. That same church has started five different churches now and they're all successful, and that church still has about three hundred to four hundred members downtown. But it's all the old people back in that church, now very few young people.

We had a tendency to displace the older people in the church. They set back and watched while we were engineers and planners and we knew how to get things done in a hurry. That's what we did. Including we went and hired new ministers who felt the same way we did. We took over some of these establishments. Some of the local people did not like that much.

Nancy: Must have been kind of frightening.

James: It was. It really was.

Nancy: They had been here for generations.

James: Rather laid back. They were fishermen, they were hunters, they were orange growers and they had their work seasons and the rest of the time they kinda took it easy. We came in here and working all hours of the day and night. People were looking for places to eat. There were none. In fact, there were not grocery stores in Titusville. There was
[01:17:00] only one in the entire city or town it is. Sometimes we would drive on Sunday afternoons forty miles to get groceries, had to go to Melbourne or Orlando. There were

no houses for rent or for sale here. I came here, I had a choice of one duplex and that's it. Then when I bought my house, I had a choice of two houses and that was it. There were no houses.

The people that owned them were not going to sell them to Cape people because they lived in them, and there were very few speculators. These people were very, very conservative. Some of them have sequentially become millionaires however because they did learn that maybe we ought to start building places. Guys like Roy Roberts and Jess Childre [01:17:41] and B.B. Nelson and a few others have all become speculators in real estate over the last forty years. Even some of the families like the Parrish's even learned that their land was worth a lot more in housing than it was in orange groves.

[01:18:00] Unfortunately that's happening too much now. Orange County in Florida for instance is not going to have any oranges in it before long, just like Orange County in California doesn't have any oranges in it due to Disney World coming in. We knew in the late 60s when Disney showed up that the central part of Florida was doomed. Those of us that had been in the Navy and had worked in southern California back during the Korean War and saw what Disney was doing there, we knew this was going to become a real concrete jungle before it was over with. That's exactly what's happening.

Those things that we did for entertainment in those days you can't do anymore, getting back to entertainment again. This was a beautiful place. Where we are now sitting for instance we had pheasant and quail. I lived about a mile from here. I had quail and pheasant in my backyard that came right off of this airfield. This airfield went all the way back over about another couple of miles and we had sagebrush about knee deep with pheasant and quail in my backyard. Today you don't see any pheasant or quail floating
[01:19:00] around here. We had a wonderful lifestyle when we had a few minutes off. That's why I decided I had wanted to come to Florida rather than California because of the lifestyle down here.

We still had a lot of varmints like otter and snakes and alligators and things like that, and we still have those. I still have otter in my backyard and I still have the big blue bearded herons. I have an eagles nest and an osprey nest in my backyard. Of course we're watching those very carefully these days. One of the best things that the space program ever did, and I was shocked when the Germans decided to turn Kennedy Space Center into a wildlife refuge. That was so different from their normal culture that I couldn't believe it. When Dr. Debus came in, he says, "I want to build a causeway from Titusville over and build a visitors information center out of all the spare hardware, and I want to set up a wildlife refuge for Merritt Island." We were all in a staff meeting and we said,
[01:20:00] "We can't believe this. Why are they doing that?"

In fact we were against it. We said those are supposed to be like launch pads out there around Playalinda Beach. We had scheduled to build a pad C. It was an A, a B, there was going to be a C for a nuclear rocket called the Nova, which was about twice the size of a Saturn V, and that launch pad was supposed to be up around Haulover Canal and Mosquito Lagoon. That's the reason we bought that eighty six thousand acres. The Germans decided no, we need to make this a wildlife refuge, and that's what they did

and got what they wanted. We did that and that's one of the most beautiful places in the state of Florida today is the natural beach at Playalinda and the wildlife reserve. I think we have about a million visitors a year and they're coming here to this area strictly to see that wildlife area, and about three million visitors coming to the Business Information Center, which is just phenomenal to us because we never saw anyone.

When we were here earlier, US 1 shut down at 6:00 at night. There was no traffic. There
[01:21:00] was no one here. When you look at this sleepy little village, fishing village and what it's seen and what's gone through here, it's absolutely amazing. I find people coming back. After the Apollo program we laid off about fifteen thousand people in one year. Many of those are coming back here to retire. Many of them never left. Even though they didn't work in space anymore, they became insurance agents, they owned business and they decided to stay here because once they found this place it's truly unique, beautiful place.

Nancy: That's for sure. Now one thing that they've done a pretty good job of taking care of but used to be worse, and I'm sure you remember, the mosquitoes.

James: Right here where we're sitting today was the establishment of the first mosquito patrol for Brevard County. A bunch of us pilots got together and decided that one of the ways they could spray for mosquitoes was by airplanes. This airport, Arthur Dunn Air Park
[01:22:00] here in Titusville was the very first mosquito patrol for the entire county. Subsequently we have moved that patrol down to the Tyco Airport now because we wanted this to be primarily a recreation and a business type airport. At the entrance to this airport was where they had a couple of World War II, World War I trainers and they rigged them up with spray tanks and they began to spray this side of the river. The lifestyle was very poor here in North Brevard and Central Brevard, South Brevard too that you could not go out after dark, that the mosquitoes would take you away.

At the launch sites it was even worse because we didn't spray out there. We used military type repellents. I remember we had the khaki cans that were left over from World War II and the Korean War to actually spray down every night and the mosquitoes were just so bad it was like a fog that you just could not see. It was rough. Besides, we had no air conditioning in those days. People take air conditioning for
[01:23:00] granted today. When I came here there was no conditioning anywhere in anything, not in our houses, not in our cars. I had my first air conditioned house and car in 1964. I had been here almost ten years with no air conditioning.

You had to leave the doors open. You had Florida jalousies they call them, the windows, and we had attic fans to keep the place kind of cool, but you just could not go out at night. The space program got rid of the mosquitoes. That was one of the things it did.

Nancy: Let's cut. Now when you were in the military you were a pilot, and you have continued to be involved in this.

James: That's right.

Nancy: Tell me about that.

James: You'll find out that people in space are interested in three things: space, flying and sports cars. I also happen to have a Jag, an XKE 1969 Jaguar. Almost all the astronauts
[01:24:00] raced either sports cars or motorboats and they're all pilots, were pilots. We all kind of grew up in the same situation about aerospace and space is almost synonymous. The space shuttle after all is just a fancy airplane to me. I've been in the simulator. I've flown in the shuttle training aircraft. I've worked on it. I've flown with all the pilots socially, that fly the space shuttle just as much as I do work my aerospace work.

In my mind they're all synonymous, and you find the same guys like the same thing. When I came here, we had a little air park here in Titusville called Dunn Air Park off of Dunn Field. It was very, very small and it was a grass field. They had no paved strips. We used to mow the grass with lawn mowers tied behind our cars on Sunday afternoon. At that time we had flying clubs, Piper Cubs and a few other planes here. Very little or no flying in Brevard County. They had no major airports. Well now today we have at least
[01:25:00] four major airports and maybe one small airport besides that. In general, the place has become a hub of flying activity because of the number of people.

We have people coming here today from up north retiring here because of these fields. We have a grass strip and a paved strip at Arthur Dunn. We have approximately seventy-five aircraft here. At Tyco we have about a hundred and fifty aircraft and it's a semi commercial field. At Merritt Island we have a hundred and seventy-five aircraft, and we have a waiting list of fifty hangars at Merritt Island at the present time, which says that we're going up over two hundred aircraft at Merritt Island. Melbourne is a commercial field with flying schools down there, so Brevard County is essentially very much a flying county. It's because of the weather. Some of these fields were surplus army air force fields in World War II because in Florida you can fly about three hundred and sixty days out of the year.

In Germany, in other areas of the country that we were fighting in World War II, they lost more students due to weather than they did to the allies. Here we were training
[01:26:00] pilots faster than they could shoot them down overseas. This area has been very conducive to flying forever. When I retired, I decided one of my community jobs would be to work with the airfields. I have been former chairman and am now vice chairman of the Tyco Airport Authority, which manages three air parks in the northern part of Brevard County. I work very closely with pilots all over the United States and the world in flying. It was something that came naturally to me. All the astronauts that fly fly either out of this field or Tyco out of Merritt Island. They bring their own private planes here while they're in training.

The flight crews are citizens of the community of flying here as well as they are in Houston. It has been a very interesting thing to be a part of the flying community. One of the interesting things we had here in the early 60s, the Sheriff's Department was very small in Brevard County, so they decided they need help on search and rescue and on
[01:27:00] the criminal escapes and things like that. We started a group of people called the Flying Posse here in Arthur Dunn, and we had about sixty-five pilots and planes, and every

time there was an escaped convict we would all take off and go out and search for these convicts that were located around. Christmas about ten years ago, I got an urgent call on Christmas day noon at lunchtime. A small boat had been missing out in the Indian River on Christmas day and it contained a close friend of mine and his son. The son was about fifteen and this close friend of mine was about forty-five or fifty at the time.

They had been missing for about five or six hours. We came here and took off in some pretty windy weather and fairly cold weather, and my son who's now twenty-six was with me, and we went out and we found them capsized in the Indian River. My son and I had breakfast Saturday morning at the airport and he brought that up. That's one of the
[01:28:00] most memorable times of his life, is the fact that we went out and actually rescued someone who had capsized in the Indian River in our plane. In fact, it was in this very plane that we did that. He was saying that's the only time he had ever been almost air sick flying was the fact that we were turning around and around over this boat, and we radioed down several other planes to come. Then they came out and rescued them, and they had hypothermia and almost died. They had been in the water six hours, and they had lost their shoes and shirts and the temperature was very cold.

Flying is something that I've been interested in all my life. I grew up, I was a teenager in War World II. I built PBY aircraft and later on got to pilot some of them. The other thing of course is a thread that goes through almost all the astronauts and through almost all the good aerospace workers is the scouting program. There are more Eagle Scouts as astronauts than any other organization. If you look back in the background and history,
[01:29:00] not the lady astronauts but the men astronauts, you will find out that most of them were Eagle Scouts. Scouting played a big part. Flying played a big part. Things of that nature. There is just a thing, a path that most space people, space engineers and astronauts and pilots and people like that go through.

That's good automobiles, good boats, good airplanes, and good space shuttles, that all fit together.

Nancy: I notice maybe it's not especially at Merritt Island, but there are a lot of experimental aircraft. You've got people who are working in design and development.

James: That's right. You see, engineers are going to design and develop and they're going to tinker with things as they go. Obviously if you fly a factory built aircraft, the designs are about thirty to forty years old. They're been very few new aircraft designed that the average pilot can afford. The Experimental Aircraft Association has a group of people
[01:30:00] who work with the very latest things in terms of materials and avionics. They get together and design and build their own aircraft. They're very successful. In fact, they're doing things now that the manufacturing people are picking up on.

Nancy: Okay. Cut.

[01:31:00]
Robert: Time code is three hours, thirty-one minutes, fifty-five seconds.