

o Alex McCool 10-21-98

(Begins mid-statement)

A Now, he brings out a lot of goods, and on the other hand -- and I am right into it right now with slave labor and doing some of the production -- and I don't know, that part sort of bothers me, Bob.

Q Ernst Stuhlinger has been talking with me and going back about it. He called me about two or three weeks ago, and he and some of his colleagues, German and American-born, are up in arms over this guy coming here. Like what you are saying, they say his bottom line is that von Braun had complicity in the deaths of 20,000 slave laborers. I haven't read it. I am just going by what Dr. Stuhlinger and others have said, but they are really upset. They are preparing to protest to Dr. Franz, not to try to get the thing cancelled. They believe in academic freedom and all that, but --

A When you look at right now, the John Glenn flight, when I look at the timing and everything and what he did and what we have all done, I have to give von Braun credit for what they did for this nation. They put us in the space business, period. And then to bring up this kind of stuff this many years later, in light of that, it just looks like the timing is so bad. I don't know what you can do about it, but it bothers me.

Q Well, there is an effort that I am quietly involved in, because I am sympathetic to Dr. Stuhlinger's problem with this and his colleagues, that may be made to get another speaker on that program who maybe can counter some of the things that Dr. Norfeld says. Stuhlinger says the guy obviously has done a lot of research for that rocket, but that he writes with a certain prejudice and bias and that he doesn't factor in the fact that everybody a Peenumunde, and the Mittlework for that matter, was working under a dictatorship, and it wasn't real healthy to pitch a fit in protest of anything or to turn down an SS major's rank or whatever and say "no thanks." It wasn't too smart.

A That's right. They had people hanging in the shop. They had them hanging in there to -- you know, the slave --

Q When they suspected them of sabotage?

A Right. That's right.

Q All of that came out with the Arthur Rudolph affair.

A Now, he's hard on Rudolph. I just got into that. He said Rudolph -- well, I know that's not what you want to talk about.

Q No, but it's certainly current.

A It's current, and with this guy coming in and here we have the John Glenn flight -- by the way (interruption) (Conversation)

Q Dr. von Braun gets pretty liberal mention through there. There was one, I thought, gratuitous reference early on about that there were a lot of people that considered him just a

apparently M. Newfeld -
"The Rocket and the Reich" BW

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merchant of death and all too enthusiastic -- no, it said Dorhenberger was allegedly an enthusiastic supporter of Hitler and that von Braun -- of course, there were two schools of thought on von Braun -- that one school strongly believed that he supported the Third Reich a little too much and that he was involved in this brutality and it went on and on and on. I thought --because of all the deaths caused by the V2 as well as the slave labor deaths -- I thought, well are you going to call our A-bomb developers war criminals?

A Same thing.

Q Scientists and engineers? I don't think you can do that in war time.

A No.

Q I mean the people behind technological advances. Now, if you put a pistol to a slave laborer's head, you know, that's another matter.

A Right.

Q Huntsville, Alabama, is mentioned one time in this 244-page text. Marshall Space Flight Center is not mentioned once in the text. In a little photo caption and there are two pieces of art that relate to Marshall Center -- of course, there is a lot of Saturn art and Redstone art -- but Huntsville gets a little short shrift although there are a lot of mentions of von Braun by name and mostly favorable or neutral. But Johnson and the Cape are just all through it. Dr. von Braun addressed that when he said, "The people who provide the power are about as sexy as Lady Godiva's horse." I am going to put that in there. The "sexy" part is the astronauts and the thunder and fire at the Cape.

A Everything I have seen, whether they have done videos or the books they have written, has always glamorized them, the crew, and most of it, at least today -- the original seven, they liked that -- all the guys I know and the gals that I know, you know, it's always "What is it with the people? It's the team. They are the ones that count, not us. We get all the recognition, but they are the ones on the firing line making sure everything is right." They give us credit, and I appreciate that. All of them I have known, and we have been back there many times -- We will get John Glenn back here. It will be at least three or four months after his flight that they usually come back. The crew and all will come back and pass out some souvenirs and shake hands and have a big thing in the auditorium.

Q They know what the truth is.

A That's right. I have gone through and I have seen a lot of stuff. The one that I wanted you to check on, and I have tried to find where I had a note -- I know where it is. It was on when somebody screwed up and -- I am going to give you some names of some other guys that you may want to talk to. This particular

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one was somebody screwed up and it was part of the guidance system on a Redstone. I think I used it. I gave a talk to the American Institute of Electronics in '95, and I thought I had the story in there about von Braun and who the guy was that messed up. He didn't hook up a connection or something, a wire. What I did was I went back to Hans Fichtner. You may want to call Hans and read him the story.

Q He sent champagne?

A He may have sent champagne, but in mine I said scotch. When he delivered it, he stayed and helped the guy drink it. Now, let's see if I can find the story. You may want to check with Hans. He's still around. Just tell him I sicked you on him. I read where you said he had brought him a bottle of champagne, and it might have been champagne, but --

Q That was on the Redstone, wasn't it?

A Right. Right. I will make you a copy of this.

(Interruption) Dieter Huzel is a very capable guy, and you can tell him -- I think he has written one or two books. He's been retired many years, but he might be able to give you some of the stuff from Peenumunde and some of that.

Q I think I saw him cited in a recent listing of some books related to Peenumunde. (Conversation -- Ed Mohlere and others talked to)

A Let me give you a couple of stories. I am not sure how to do it. I remember and I want to double check. I did ask Swing ^{hammer} yesterday. Von Braun's saying: "Late to bed, early to rise, work like hell and advertise." He used another one: "Skin was so thick that he could stand in the corner without a backbone." You know, you have to have a thick skin. But he preached a dirty hands or day-to-day approach. I will give you this thing here. The guy had a doctorate in physics, but to me he was a hands-on engineer. I am going to give you this, but it captured his ability to sit in high-level, critical meetings where we would have -- and I will give you an example if you want to come back to this -- Apollo 8, where he would cut through and would focus precisely on what needed to be done. Why don't you just keep this? We still carry that philosophy and the Germans always did. You can only analyze so much, but we really need to test. I am always, even today, with analytical models that we have in terms of doing analysis. In those days it was slide rules; today we have all kinds of computers. Today we still want to test to verify what the analysis says. We do that over and over and over. Let me give you a couple: We went to McDonnell in St. Louis during the Mercury days. I was with von Braun and we went to look and it was the early days of Gemini. We were with McDonnell and, of course, von Braun always prided himself with being a hotshot pilot, and he was. He would fly everything. He

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Piloting

was qualified in multi-engines. Many times we would be going somewhere where he would be sitting up in the left-hand front seat. That's how he knew those pilots. Anyway, while we were at McDonnell in St. Louis, they put him in a simulator, and this was the F4-Phantom simulator. He thought he was a hot-shot pilot and he flew that thing into the ground twice. We were all there and the McDonnell folks. We gave him the raspberry and a hard time about the thing being too hot for him. But that was in the early days when they were developing the F4-Phantom jet.

Another one: We had gone to Van Nuys, California. This was in the early '60s. We had had an incident on the S4B -- the S4B is the third stage of Saturn. This was Douglas up at Sacramento. They had a test stand, and they wiped out the J2 engine, and that was a 200,000 pound thrust engine. What we did, von Braun called his buddy Kurt Debus at the Cape and said, "Hey, we have got this investigation. You are probably going to have to chair it, because we have to get somebody from the outside to chair an investigation." He said, "How about letting us borrow your jet?" He had a Lockheed Jet Star that he chartered from Lockheed. At that time we didn't really have a G1 like we have here now, the Gulfstream. Anyway, the plane comes in and picks us up at Redstone. I think there was six of us or eight of us. It was eight, I guess. We flew from here to Van Nuys, California, to meet with Rocketdyne, who made the J2 engine. Then we go from there up to Sacramento and we meet with the Douglas guys and look at all the debris and everything. It was really a mess. I was in propulsion and that was the reason I tagged along. Coming back, we left there to fly non-stop from Sacramento back to Redstone. I was really impressed as a young engineer. Here it was the first time I had ever been on a jet, a private jet, period. I had a young fellow on there. He was a Lockheed employee and, of course, the two pilots were Lockheed employees. I asked him, "Can you tell me something about the thrust of the engine?" It had four engines. I said, "Tell me something about the things on the plane and everything." He said, "Okay. Wait a minute." So he goes off. He's gone about 10 or 15 minutes and pretty soon he comes back. He's got this brochure and he hands me this brochure. Man, it's got all the details about the thing. Well, on the last page has a certificate and it says "This is to certify that A.A. McCool did fly from Sacramento to Redstone, Huntsville, Alabama, ground speed --" so and so, altitude so and so, and it's signed by the pilot, Werner von Braun. Here he comes out and he had been checked out flying jets. He came out with this big, old, shit-eating grin on his face. I still have that. Here he was flying this Jet Star, this corporate jet if you will. I don't know how you make something funny the way you do it here when you put things that won't do and ----- and

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so forth, whatever you want to do.

Another time we went to New Orleans. We flew down to New Orleans. We were going to go down and back on a G1 -- it was just a prop. But then we get down there. That was at Michoud. Boeing was building the tanks and the first stage and everything down there. The G1 is a turbo prop and we still fly it. He used to fly the thing. It's a good -- if you go to California, it takes you seven hours. That's a long time.

Q I have heard of the Gulfstream.

A When you talk to those guys, it would be good -- that thing has more than 5000 hours on it. We were going to go down to New Orleans, see, to Michoud assembly. Martin builds the tanks now. But we get down there and he decided he wanted to go up to -- in those days it was called the Mississippi Test Facility. We were testing the cluster up there and the J2 engine. He decided he wanted to go there, so he said, "Hey, Alex, you need to come with me. You're the propulsion guy." So we got Carter to take us up there and we go. Then the next thing he decided he wanted to fly to the West Coast. Well, I didn't have any need and they didn't want me to go to the West Coast and he didn't ask me. I would have gone if they had, but here I am stranded down there in New Orleans. I didn't have a tooth brush and I had a 20 dollar bill in my pocket and I had to get home. Well, luckily, at that time my brother worked there in New Orleans for NASA in the resident office. So I stayed with him and spent the night with him and they helped me get a ticket to come home. It was one of those trips where you go in and you never know where you are going to go or what he was going to do. I got stranded down there.

Another one: It's not a flying thing, but we were in Washington for a headquarters' meeting. What he did was we got ready to leave NASA headquarters and go back to National Airport. We took a cab. Well, he and I were in the front seat. I sat in the middle and there were three in the back, so there were five of us. He asked the driver and the taxi driver stopped in front of one of those booze stores up there. He stopped at the liquor store. Now, the reason is, I found out later, that you could buy a better variety and it was cheaper than what you could get in the State store here in Huntsville. So when he gets in, he has an armful in bags and everything. He hands me a bottle when he gets in the cab. I am still sitting in the middle. We had to wait until he got back in. After getting settled, pretty soon the driver is driving off, so then he grabbed the bottle from me. He said, "Let's not make a mistake." It wasn't for me, that bottle. He didn't realize that I was a teetotaler. I wouldn't want it anyway, but I had his bottle there. So he said, "Let's don't make a mistake." He was serious about that. After he got settled with his other bottles and we were going to the airport --

Travelin' Man

Travelin' Man
(Booze)

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Q In other words, don't make the mistake that you thought I gave this to you.

A That's right.

Q He just gave it to you to hold.

A We all were traveling by NASA plane back, but we had taken a cab, like I said there were five of us, and I am sitting in the middle by the cab driver. We stopped by the liquor store and he loaded up.

Q But that was only to hold.

A I had remembered that. Another one: I am not sure about this one. I used to work for a guy named Bruno Heusinger. He died and von Braun was one of the pallbearers at the Church of the Nativity many years ago. Bruno told me the story. He was a little short guy from Essen, Germany, and he worked with him over there. They were over here and they wanted to go back and get married. He and von Braun went back and von Braun was going to marry Maria, and I don't know the name of the city where they were, and they both went back and got married.

Q Bruno did and --

A -- von Braun at the same time and they stayed at the same hotel and they had Army MP soldiers guarding them and standing outside while they were in the hotel. Bruno told me that story many years ago.

Q They were in the same town and the same hotel?

A Yes. And I think the concern was more that they were still under contract over here and they were not citizens. That probably had something to do with it, because they really worked for the Army. Secondly, there might have been the worry that the Russians might kidnap them. Bruno was the one that told me and the fact that they saw some of the slaves that they hung and everything and talking about how rough that was. Yesterday Anne gave me that. Is there some way you could use it?

(Conversation) (Interruption in tape)

A I think the book will do well. I think you have a good chance. It's the human side. (Conversation) I will give you another story, if you would like it. (Evidently, looking at a book together.) (Reference to John Young) I tell people, he's John Young. I introduced Roy Bridges about a year and a half ago to Bob. I said, "Roy, he's our John Young. We always look to him and he keeps us focused and everything.) He said, "Well, I have got to get me one of those." I would like to read this some time.

Q (Conversation about "The Light Stuff")

A Let me tell you one about John Glenn. It's kind of appropriate, but it really ties to von Braun and what I said a little while ago about him being able to set high level meetings. This one is more towards -- and this is when Kennedy already

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Gilruth

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committed us to go to the moon. It was before John flew. He flew February 20, 1962. The Space Task Group was still at Langley, and they were getting ready to move down to Houston. At that time a handful of them -- Bob, Elruth, and Cajay -- went down there and they were at a motel. They had rented this motel and that was their offices down there. I don't even know where it was. At that time, it happened right after John Glenn's flight, the big flap was how do we go to the moon? Do you go earth orbit rendezvous or do you go moon orbit rendezvous? J.F.C. was sort of leaning towards the lunar orbit because some of the Langley guys back then had proposed that. Von Braun's thinking and some of our folks were thinking earth. But headquarters had a gang idea and the academic and science committees and all kinds of stuff, so von Braun decides we are going to go down, and they had this Huntsville Aviation -- now, we didn't have planes back then. It was downtown at the old airport, and they had an old B26 that they leased and we rented the plane. They had their own crew on there from Huntsville Aviation. Von Braun and I think six of us -- he took me because I was propulsion, Lew Richards, and _____. I am trying to remember who else. Anyway, to make a long story short, we get down there, but he says as we fly down, "I will let you read my speech." Well, that was the noisiest plane I had ever been on in my life. So I am reading this thing and the bottom line was he was trying to team up and go LOR, that was going to be the thesis of what he said and was going to do and all this other stuff. So we go down there and John Glenn was there. Here we are at lunch before his speech in a meeting and everything. The meeting was to try to see how we were going to go and what we were going to do. I am sitting next to John Glenn and I am in awe of this guy. Boy. Then John is telling some stories about when he and Ted Williams were flying in Korea and some of that stuff. Real interesting. One thing that I remember with John, he was saying that most people at that time when you are hitting 40 you were sort of over the hill, but he and Ted Williams, the last of the 400 hitters, both Marine pilots and so forth, are not over the hill. When I contrast that to today and the guy is almost twice that age and still flying, you know, that's kind of an aside. I am in awe of him.

spi?

Q This is after Glenn's flight?

A After Glenn's flight. He flew the 20th, so it had to be a few weeks after that. I sat next to him in this little dinning room that had just a couple of tables. There weren't many of us there. I was just in awe of this guy. He's still my hero. Von Braun gets up and he talks and goes through all this discussion of LOR versus EOR, but the bottom line was he was going to get Bob Geru and ourselves signed up and hit headquarters. So he was cutting through all this stuff and force the thing and get

academia and all these places and these other outfits to say yes, let's go LOR. Well, it wasn't too long after that that he was able to hit Bob Geru because he wanted to go LOR, and he teamed up with him. But von Braun, you know, knew that if we could get the two of us, then they would get headquarters and the rest of the world to decide it --

Q That needed to be decided one way or the other.

A Right.

Q I understand that von Braun felt that if you went EOR, that would set you up better for Mars missions and other planetary missions.

A That's right.

Q He was looking ahead.

A Yes.

Q But there may be a better way for a lunar landing only and lunar orbit would be better.

A Right.

Q So he kind of sacrificed the long view for the immediate mission?

A That's right. He was a visionary. He was always thinking ahead. Just like when he was fooling around with the V2 and all that, he was thinking about space, space. He was a visionary already looking ahead, and he would do those things. Well, he had to do it; he was working for the Army. Same thing with us in the Redstone days. Now, he was a visionary. A lot of people don't know -- I remember some of the work I did in the '50s. He already had the idea of a suborbital flight, like Allen Shepard flew, before there was any kind of Mercury or any of that stuff. In fact, of course, we worked for the Army in those days, and my job was the size of the tanks in terms of propulsion, what kind of performance would you get. I went out to Al Zeller, who was one of the Germans with ground support equipment. He's dead. The two of us went out to the Ballistic Missile Division and we showed them -- I carried some classified stuff. He called it "Project Man High." That was von Braun's idea. What it was was the concept just to fly a suborbital flight, just up and down, in a ballistic path, which is what Shepard eventually did anyway when Mercury came into its own on top of a Redstone. That was his idea. Ultimately, he really wanted to put somebody in orbit and they would go, like you said, into space. He was always looking ahead.

Alan

ck.
sp.

Q So when he handed you that speech copy, that was your first --

A Right.

Q -- knowledge that he was going to try to get everybody on LOR?

A Right. When we were on the plane going down, and we didn't

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know why we were going there. My job was to describe, you know, back in those days, what the propulsion system would look like. I covered that on the propulsion part and Dr. _____ -- he's dead also -- covered all the structural design and everything. Richard covered the guidance system, the electronic stuff.

_____ described our stuff, what the design looked like on the Saturn. We got through then he would give this speech. That was the thing. Our spiel wasn't so important. They wanted to know what we had been doing, and, of course, we described all of this. He got the decision after that. It wasn't long. I think that's about it. I was trying to remember some other stuff like that.

Q Have you see or did I send you copies of that Alabama Heritage magazine?

A Yes.

Q I don't know whether Mike Wright, who did that -- I thought he did a good job -- interviewed you, but I don't need to get you to repeat the same things you told Mike. There may be some things I may want to quote you on.

A You can have this.

(Conversation.)

Q Dr. von Braun loved to take the controls over, didn't he, in airplanes?

A Oh, yes, he loved to fly. The idea of a professor calling him Dr. von Braun, that was the highest title.

Q Is that where he talks about dropping that title?

A Well, for a long time we would call him -- he would come in and everybody would stand up and he was Professor rather than Doctor. The inner circle would call him by his first name, the original and the lab chiefs. They would call him "Werner." I could never call him -- I remember when I used to call him "Professor." Then he said, "No, call me 'Doctor.'" He never did say -- I remember Wagner told me to call him "Herman," but most of them I would call by Mr. Reiznik or Mr. Schulze. You may want to talk to Schulze, William Schulze. He lives on Hermitage. He's a real fine guy. If you call him, he's in his 90s now. He was my boss. He was my first boss when I came here. When I came here in '54, I went around and there was a lot of interviews and so forth. I went to what we call "Launching and Handling." They actually worked under Hans Huefer at that time. Hans Huefer had all the ground support equipment and that stuff. They offered me three different jobs over there. I never will forget that. Then I went back to the laboratory and Lindstrom was kind of an administrator. He had gotten out of the Army with an administrative assistant there in the lab. Dr. Lyle was the chief. Anyway, he sends me to Hans Paul -- he's dead -- and he had a _____ group. Well, he kind of talked to me like I was a

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kid out of college and I got turned off. Eventually I ended up working there for many years. Then I would go see Mr. Schulze. I remember he had his desk bucked up against another desk and Herbert Ferman sat in front of him. All I could think was that guy looks like Himmler. He had those piercing eyes and everything, and I am sitting there being interviewed by Mr. Schulze. He took out this drawing. I was impressed. He lays this on there and here's what looks like a missile of some kind. It's sitting on a pedestal and there's the trucks and lines and everything. What he did was he put his arm on it and says, "We work on this up here." He knew I had been over to _____ and all this ground support stuff. That guy taught me something I never forgot. (Conversation)

Q Was there anything we needed to come back to?

A One, is more toward his character and leadership. We had after (Unintelligible) -- all the key. What it was we had on a previous mission a line actually carrying propellants broke on us on a previous flight on the second stage and on the first stage. Well, we knew what it was and we were able to fix it. The question was do we let him go to the moon. (Unintelligible) So we had the big shindig, and I was invited because I was working in propulsion. There was a lot of agonizing and sweating and everything with von Braun sitting in this critical meeting. He knew what we had done to try to understand the problem and be able to fix it and convince ourselves that we qualified and knew it was going to be okay. So we all signed up for that in that meeting, but he was really the inspiration and the leader. There were all the company presidents, all the key people. There were people like Debus who came up from the Cape, all headquarters people. That's when we signed up. (Unintelligible) I talked to Frank since then. In fact, before he flew -- he called me the "engine man" -- they used to come up, and we would tell them what the engines would do and all this stuff. I ran into him a few years ago down there after he retired and all that stuff. We talked about that. The thing that I liked about that whole thing, Bob, is when they read from the book of Genesis on Christmas --

Q Wasn't that moving?

A It was, and I have never forgotten it. It still touches me to this day to know for them to go around and how it helped and what it did for us.

Q And it helped so much with public support.

A Absolutely.

Q Today it would be considered politically incorrect, probably.

A That's right, reading from the Bible.

Q But still it was a master stroke, and it came across as very

Borman →

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sincere on their part, too. To me it captured the whole -- space exploration involves the cosmos, and how big can you get and all of creation and the Creator and all of that. They just captured that spirit, I thought, extremely well.

A Von Braun, he knew. For a lot of years I think I had a lot of his speeches like that. He would talk about science and Christianity. He gave talks about that. He believed.

Q That is what I have been advised.

A I think I have copies of those speeches back from those days. I don't remember the guy who used to help his speech writing before Joe Jones. Now, Joe would know. I am trying to remember.

Q Guy Jackson, who passed away; Foster Haley, who is still with us; Amos Crisp used to write some.

A Who had the job that Joe Jones had?

Q Bart Slattery.

A Bart Slattery. Have you ever talked to him?

Q Bart passed away some years ago, and I didn't get to talk to him.

A He was the one I was thinking of.

Q He was head of Public Affairs.

A Yes, back then.

Q Let me ask you about this: I have read that in line with the German's philosophy of test, test, test, that the team on developing Saturn V wanted to test fly or to flight test elements rather than going all aloft. And George Miller is said to have overruled von Braun and the team. Mueller

A Right.

Q How did Dr. von Braun take that?

A I thought he took it well. See, he wanted to go through the methodical thing. He always did that --you know, build up to it -- because he recognized that there were so many problems and so much risk. So the thing was step by step by step; but if you look at it from what Miller's prospective was, we had the task to do that before the end of '69. ~~I think '69.~~ Just looking at the schedule, he figured (Miller) that the gamble and the risk was worth it. So von Braun never -- once they said "Let's go do it," I never heard him say anything negative. No, uh uh.

Q Apparently, the Apollo fire had a lot to do with that. Earlier it may have been step by step, but that cost time.

A Now, a lot of that --

Q Of course, that didn't involve the launch vehicle.

A No, that was only the capsule. Rees was involved in that investigation, and Ed Mohlere did a little backtrack.

Q He has, in fact, and I knew of how -- Ed told me a great story about the private moments where Dr. von Braun -- Webb came down and met with von Braun, and they decided at Webb's

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suggestion or insistence that Eberhard was going to be the man to head up this investigative team and to troubleshoot the capsule, the space craft, and that they called -- maybe it was Jim Daniels. Either Ed or Jim Daniels told me this. They called Eberhard down, and von Braun told him he was being volunteered to head this thing up and that Dr. Rees took it like a soldier and said, "Of course, I'll accept that," and then Webb left. Then Eberhard's face just fell and he kept saying, "Werner, you didn't tell me. Why didn't you tell me?" In other words, before he was brought in there and hit cold with this -- maybe Dr. von Braun didn't foresee that that was going to be a demand by Webb, but Eberhard was just crestfallen that he was hit by that. He knew it was going to be a tough, dirty, mean job to go in there and fix all the trouble.

A Oh, yes.

Q I don't know that I would -- it makes an interesting story, but it's more about Eberhard Rees than it is about Dr. von Braun, and I am focusing on von Braun. Anyway, I thought it was interesting that that was his reaction. But then he went and did a hell of a fine job.

A He did. I was out there at Space Division for the second stage of Saturn. That was the same company. That was North American. We had all kinds of problems. I spent three or four months out there. In fact, Ed and I were real close. Funny thing, one time Rees was coming down and he didn't have a clean shirt. So I loaned him one of mine. We were at the Apollo Motel which was like two blocks from the factory, six dollars a day for a little kitchenette and all that, a regular home. I never will forget that time. The story here, I don't think a lot of it has come out. I really blame the company, the company themselves, for the shoddy workmanship. They found tools in there; they found wires that were not properly grounded, (Unintelligible) insulation. The core of that, if you can visualize a tank -- I was going to show you how it worked for the second stage. In other words, if this were the second state, this would be another one up here. See, you come on down here and then you had gaunt lines that come out and so forth. What we did when we found out -- now, this is on the S2, second stage of Saturn -- right in this area right up here, we had them go x-ray that thing and they found pens, combs, pliers, scissors. You have never seen so much stuff around there. This thing is 33 feet in diameter, and the workers are up there dropping stuff down in there. What we worry about is: When you pressurize this tank, what's going to happen if you have got a tool or something laying there? This is a thin membrane.

Q That's inside the skin?

A Yes, inside. See, this is right down in this joint. That's

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the skin, the skirt, but in between it comes down to where it's just a notch. They got a lot of this stuff out, but there was a lot they couldn't get out, and we had them x-ray the thing. What they did, they x-rayed this all the way round and they put it up in the factory, all this stuff that they saw, so the people would see it. They had the x-ray pictures 33 feet in diameter, so you would get the circumference.

Q Now, Eberhard was not involved in that?

A No, not the shoddy workmanship. It was the same thing with these guys. They were in a hurry to ship this thing to Mississippi. This is what we call the "S2T" which eventually ruptured. That's another story. But they were in a real problem of getting it down there and getting it set up, and then I ended up down there for four or five months myself helping them get this thing in a test. Well -- (end of tape)

(Tape side B begins mid-statement)

Q On the 10th floor?

A Yes, 10th floor. Von Braun was sitting up in the front. He would always sit up in the front corner.

Q And this is the Apollo era?

A Yes, during the Apollo era. We were going around -- I don't even remember what the subject was -- but one of his board of directors, if you will, the "inner circle," was arguing with him. There was a pack of cigarettes there, one of these cardboard packs, he took the thing and flung it across the table and hit him right aside the head there. We all laughed. It certainly wasn't personal. I never will forget that. But he got his attention and he got off of that subject. That was the funny part of that thing, Bob. I never will forget that.

Q I understand that sometimes he would slam his fists down

A Oh, yes.

Q -- to get attention.

A We got hung up on some point. I don't even remember what the point was. It was somebody sitting next to him that had the pack of cigarettes there, one of those cardboard things. So he just took it and threw it across the table and hit him right aside the head. It almost hit him in the eye. Everybody laughed about it, see, and it kind of broke the ice and then they got focused again. That's what I liked about the guy. He was something else. He would come around in the offices and everything where the designers were. He would look and "What are you doing there? Why don't you do it this way?" or "Why don't you do it that way?" He always had ideas like that. A lot of them were kind of -- you know, for every five or six, maybe one was good. Some of them were hairbrained. I was with him one time at a Rocketdyne and the president out there asked him -- they would always try to pick his brains to know what should be

Bldg. 4200 meeting

"As Mgr."

"As Mgr."

*

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McCool

"Visionary"

As. Mr.

done in terms of where they should invest their dollars and so forth. "Werner, do you think we ought to do it this way?" Boy, they would just be pumping him. They would be taking notes and getting details of future things and rocket engines and what they were doing. I would listen in on it and these guys were real crafty to find out what. He usually was giving them good ideas to invest for the future. He was good at that stuff.

Q He looked ahead always.

A Yes. And they knew that whatever it was that he said was going to be probably the way that the country was going. He was something.

Q Did he ever share with you any stories from the War years?

A No.

Q Peenumunde?

A No. What you find with most of them was they wanted to put that behind them. I think you will find that if you talk to Mr. Schulze or Pickering or any of them. They just -- I want to say that having been around the SS and all that and all the spies always trying to listen. They were very, very careful of what they would say and what they wouldn't say. They brought a lot of that with them, and that was just a chapter in their past that they just wanted to put behind. Now, they were glad to be here. They were really glad to be here and in this whole new life.

"The Team"

Hans Paul told me -- he was the one I told you I worked for after Mr. Schulze -- One time I went in there. He (Unintelligible) had a bad day or something. "You know, things are not so bad. I went through two wars, WWI, where I lost my first wife, WWII, and lost everything he had; remarried." He said, "The only thing I had was my degrees. I was able to start." I never have forgotten that. The guy was smart. We would be sitting there and he would be writing Greek, Hebrew. He was a brilliant man. He died a few weeks ago.

Q Everything is relative and that kind of puts today's problems in perspective.

A Right.

Q Speaking of degrees, you had an engineering background, right?

A Yes.

Q You took your degrees in what?

A Design and mechanical.

Q (Conversation)

A An interesting thing here, the preponderance of engineers are Auburn graduates that we have. Now, you have some Alabama and some Tennessee and probably more of Mississippi State. Of course, you have Georgia Tech and a lot of others. The preponderance are Auburn graduates, and to me they are some of the best engineers anywhere.

t. McCool

Q Did you go to Auburn?

A No, Southwestern University and LSU. But I grew up in Florida. I went to Florida for a while.

Q I want to ask you about Peenumunde. There aren't too many funny stories about Peenumunde and the War years. Of course, it was pre-war, too. Yet, wherever people are there are amusing things that happen in their lives.

A Oh, yes.

Q Somebody has told me the story, which I have never seen published, about when Hitler had withdrawⁿ his support from the V2 -- he had some dream that it would never materialize, so he cut it way back on the priority -- there came the time when the team thought they were going to have a first successful flight, truly successful flight. In preparation for that, they stationed movie camera crews in about 10 different sites at the impact area and every possible angle of the launch and flight and impact. They stationed the impact one right on the target because they figured that was the safest place. The thing launched and had this perfect flight. All these cameras were grinding away at the launch phase and the whole routine for as much as they could capture on film. Then they went back and put together this film and it made it look like it was 10 different flights, not just one, and they even suggested or hinted in the narration -- they may have used plural -- and took that to Berlin and just showed it and left the strong impression that this was multiple flights and it was only one. The story goes -- and here comes the faucet turned back on -- that von Braun on occasion told that story himself and/or Rees. It was sort of like a dinner-table conversation in small groups in Huntsville dinner parties.

A See, you could tell a story like that, and you could say -- whether fact or fiction -- it makes a good story. You could couch it that way without checking whether it is authentic or not. That's the way I would do it. Now, this guy may say something about it. I can't find the book. (Unintelligible) I am only about half way through. He may mention something like that. I don't know. But rather than waste the time, I would couch it just like that as a story that was told. (Conversation) He tells about that that they didn't get the support to get the steel that they needed, to get the labor that they needed. The Fuhrer was hot and cold. They tried to get Himmler. Dorhenberger actually told that Himmler want von Braun to join the SS. Dorhenberger -- I read this in the last day or two -- told him to go ahead. He asked him what he should do? He didn't know what -- Dorhenberger thought it would be good if he did and be maybe a captain or something like that. They gave him a commission, but he didn't have his heart in it. But he did join, because Dorhenberger, who was his boss, thought it would be

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helpful to him.

Q Others have told me that, too, and Stuhlinger's one. It started out as a kind of honorary lieutenant's rank for von Braun, and without his knowledge or permission or anything else, that they kept promoting him within the SS. Von Braun on at least on occasion consulted with some of his inner circle, the scientists and engineers, about -- and I am sure Dorhenberger had to be involved in that. They, too, said, "You had better take this and say 'thank you.'"

A Again, like you said earlier, Bob, under a dictator and in war time, what do you do? It's your life and that's your country.

Q You don't make waves, for sure, that might displease the ultimate ruler.

A I don't know. (end of tape)

Add to Alex McCool interview: (Oct. 21, 1998) (Manager of Space Shuttle
Projects Office, NASA-MSFC)

"Von Braun had a doctorate in physics but he was a hands-on engineer. He ~~had a~~ had a 'dirty hands' philosophy of engineers doing hands-on, day-to-day work."

"Test, test, test was his grand philosophy."

"He had a charismatic and visionary spirit. He had th ability to sit in high-level, complex meetings and cut thru th discussion to focus on precisely what was critical."

"He attracted a concentration of talented engineers and scientists, and under his leadership they were able to do the impossible."