

July 29, 2003

(Speakers, Jessica and Nancy, did not identify themselves when speaking)

DR. ORVILLE BUTLER: I'm Dr. Orville Butler and Jessica Barelli, (phonetic) and Nancy Swartz (phonetic) are here today interviewing Bruce Jansen.

MR. BRUCE JANSEN: So this is a recording.

DR. ORVILLE BUTLER: Yes.

MR. BRUCE JANSEN: I got you a copy of that and I also have copies of some of the material that I'm gonna go over with you all today. Gonna let you have copies of it, so you won't have to worry about reproducing them.

JESSICA OR NANCY: Okay.

MR. BRUCE JANSEN: If it's of any use to you. I'm also gonna recommend two (2) additional people that are sort of key people in KSC history of safety and that's Joe Reynolds and I think I already shared his name and phone number with you. He lives in Titusville.

JESSICA OR NANCY: Yes.

MR. BRUCE JANSEN: He was sort of the KSC safety subject matter expert for many, many years and in fact, some of the presentations that he and I worked on, and he worked on before me, before I joined him, or had his name on it, but he retired in January of '90.

Now as another aspect when you talk about history of safety as KSC is the Ground Safety Review Panel, which is a program level board. In that function resides in

my organization and the chairman works for me. That goes back probably to the 80's, where all these experiments and payloads that fly on the shuttle, when they come in, they have to come in through the Ground Safety Review Panel, and to make sure their not hazardous, and if they are hazardous, we know how the hazards can be mitigated or controlled, so there's a process we go through to make sure that the payloads are safe to fly, and they cannot fly until they get our approval that their okay. So you need to tie that loop in and I'll give you an organization chart with his name and phone number on it, even when we're finished with this because that is an integral part of KSC safety history. So I'll preface that. Okay, Dr. Butler you want me to... what do you want me to do here?

DR. ORVILLE BUTLER: I need you to fill in the release there and preferably check the "none".

MR. BRUCE JANSEN: Start at the top?

DR. ORVILLE BUTLER: Yeah.

MR. BRUCE JANSEN: Okay, check "none".

DR. ORVILLE BUTLER: Yeah that way we have a (inaudible). That way we don't have to come back and get another release.

MR. BRUCE JANSEN: Is that all I need to do? Or do I...

DR. ORVILLE BUTLER: You'll need to sign down at the bottom of this too.

MR. BRUCE JANSEN: Now, who have you talked to in your travels? I know Tip Colon (phonetic), who was my boss, since the year 2000. He sat here longer

than I have. They say he knew Moses... (laughter) When he gets his retirement certificate, it will be in Latin. He's been around so long.

DR. ORVILLE BUTLER: We've talked with Jim Harrington this morning.

MR. BRUCE JANSEN: Oh, Jim?

DR. ORVILLE BUTLER: Yeah.

MR. BRUCE JANSEN: An old Launch Director and then turned Safety Guide for awhile. JoAnn Morgan was another one that was Director, for about two and a half (2½) years.

DR. ORVILLE BUTLER: We talked to Pat Sassine (phonetic). We talked to Colonel Sheller (phonetic) who was in charge of site activation for 39. Who else? My co-author talked with Walt Kapryan.

MR. BRUCE JANSEN: Oh Walt. I haven't seen him in years.

DR. ORVILLE BUTLER: Quite a few other people, whose names are slipping me now.

MR. BRUCE JANSEN: There were some other safety directors, and we'll get to the evolution of safety at KSC and probably a key milestone in January in 1987, when they centralized SRQA, and put Gene Thomas (phonetic) in charge of the first centralized SRQA Director. We had about 400 people then. That was a big milestone and then when Gene moved up to be the Deputy Center Director, Al Parrish (phonetic) took over, and thereafter all they had JoAnn Morgan, and after JoAnn Morgan, they had Tom Breakfield (phonetic). After Tom Breakfield they had Chris Berry (phonetic). And then we decentralized, that's my term, but I think they call it

distributed now, the SRQA organizations into the line organizations. Instead of having us in one (1) group, as one (1) directorate, they took the shuttle people, safety and reliability. They call it Mission Assurance now - SM&A. But then its Shuttle to the Space Station, put us in Space Station. Put the spaceport technology group, so what they did, they fragmented us into the line organization. In our questions here that you're gonna post in the NOC, I'll tell you why that happened. So, I know you got a sheet, a guideline, you want to go by first? Is that how you want to start it?

JESSICA OR NANCY: Yes, basically we are looking through the files and I guess we just wanted to go through chronologically, but first we want you to talk about safety and evolution, that's our main research. When you first came as a quality engineer, what were your responsibilities of that as opposed to just engineer, like how does equality come into it?

MR. BRUCE JANSEN: Well, let's go over to the last page and start when I first got here. When I went to the University of Alabama, '62 to '66, graduated as an industrial engineer and then NASA was hiring because we were going to the Moon at that time, in '66. So there was a lot of impetuous to hire young fresh outs. So I remember a guy from personnel, Sid Simmons, I believe was his name, and he came to the University and said I know your Father works for NASA, he came from Anniston, Alabama. That's the connection I had with Alabama. We lived in Anniston and the Anniston (inaudible). So my Father worked there for the Government and then I went to the University of Alabama and then they hired my Dad - we came down here as a family, so I stayed up there and graduated. Sid Simmons knew that my Father worked

for NASA so he says, we have a job for you. Would you like to come down and start? That's my whole journey to NASA. Titusville.

When I came on board it was as a general engineer. That's the only position I could qualify then, cause that covered all the gambits of industrial, electrical, mechanical, so about two (2) weeks after I arrived on board, they sent me over to the Installation and Support Director, and worked as a quality engineer. Now back then, as it starts then, I was responsibly for reviewing drawing and specifications, but it was more from the quality (inaudible). That's safety. It didn't have anything to do with safety at that time. Quality was strictly putting in the right R & QA requirements for reliability and quality research requirements and requests for proposals. Making sure that the engineers I worked with, electrical and mechanical, did incorporate the requisite R & QA requirements in specification, purchase requests, engineering drawings, etcetera. So that's where I started getting a taste of Quality. How is that different from Safety? You need different documentation, different discipline. I didn't worry about safety then. Somebody else handled that. So I was strictly a QE - Quality Engineer. Now I didn't know anything about safety at that time.

JESSICA OR NANCY: How has it seemed, we've been talking to (inaudible). Obviously we say that quality assurance and safety has been closely connected, and how did you evolve into becoming involved in safety? Also how have you seen them being connected?

MR. BRUCE JANSEN: When I came onboard with NASA in '66, I guess you could say that Quality Assurance, at that time our R and QA, was

decentralized. It was in the lying organizations. Safety was in a stand (inaudible) to the Center Director. I didn't really get involved in safety until about January, 1980. Let me look at my resume. Yes, Somewhere in 1980. There was an opening announced for a GS 14, as the Chief of the NASA Survey and Audit Staff. Now this was a small staff, called Safety Reliability and Quality Assurance and Protected Services. They had the mail code, SM. I don't know how far you go back Dr. Butler, are you somewhat new to KSC or?

DR. ORVILLE BUTLER: Yeah, I'm under contract to write the book.

MR. BRUCE JANSEN: Okay, I'll try not to use a lot of acronyms, organizational codes and assume you'll all know them. But the old SM organization, our SR and QA and protective services, had a small staff of safety people and had a small group of R & QA people, and they had security all together under one director and then that director had about 50 people.

Now what they did, and what my job, and put in for it, was the NASA Survey and Audit Staff Chief. So, it got me out of being a QE in the QA world and operations, and I'm not going to bore you with all the stuff that I did, but I was selected, so my job at that time, and this was my first exposure to really what we would call Safety was, I had a group of about five (5) engineering personnel and what we were responsible for going around to the contractor in civil service organizations and have SR & the QA and survey them, and audit them. Surveys being comprehensive programmatic assessments. It would take anywhere from a week to two (2) weeks to do a comprehensive analysis of their organization. Looking at their documentations, their

implementation, to make sure that they were in compliance to requirements. If they were not, we would iron up findings, deviations from established requirements, observations which were – this is not a deviation from a requirement – but this is might be a better way of doing your business than your doing now. So that was an observation. That organization could either adopt it or not adopt it. It was an either or. A finding was you had to respond to that finding and fix it. Change your documentation, change your methodology.

We also had verifications that they were in compliance due requirements. And we had commendations. Now this was something that I'd had added when I came on board. I felt like being in a line organizations and being exposed to some of these OSF audits and surveys, I didn't really like them, cause they were all negatively oriented. It was like being a policeman. They would go out and assess your organization and they would write you up for the bad things that you were doing. Well, what about the good things you were doing. So I said let's write some commendations. If somebody is doing an especially good job, let's write them up and commend them for their effort. So that was something new we added. But we did go out through the line organizations, the contract civil service and do those types of assessments.

That happened for about four (4) years and it was strictly a small group of, I would call a subject matter experts, an SRQA, and what I had to do also, Dr. Butler, was not evident when I took over, was there was an old formalized approach of how we did SR & QA assessments, or audits and surveys. Now audits, what I mean that's a snap shot. That's just going out into the field and taking a quick look at things, like

work procedures. Is the work procedure available? Is it being followed and is it adequate? Is it being used? We look at those, that's what I mean by audit, a snapshot. Survey was a comprehensive analysis. So I sat down and I wrote a book on how to do surveys and audits in the SRQA world. I also wrote a lot of procedures on how we do that.

So, and then we went into policy. Now what happened then? In about 1984 the Director came to me and he said, Bruce, I would like to expand your job. You're doing a great job on doing surveys and audits, but our policy at KSC is deficient in the safety reliability and quality assurance world, so this is really, for about ten (10) years, is where I really had a lot of fun. My staff was increased for up to ten (10) people. I had two (2) branches. I had a little technical assistant, Toody. Secretaries. We wrote all the policy on safety, reliability, quality assurance for Kennedy Space Center. That involved KMI's, KSC Management Instructions, KSC handbooks, and I think they have changed those terms now and they call them PG's and things like that, but back then they were called KMI's, and KHB's.

KSC was really deficient in doing that. So I was asked to do that, we had about 50 to 60 policy documentation and information handbooks on how you do that. Some of them still exist today. We also did all the surveys and audits. My old job that I used to do, but they did give me a policy implementation, so I stuck with that, Dr. Butler for about ten (10) years until about 1994. And that was very interesting. What happened was, NASA Headquarters, our OQ comes down about once every year or two and assesses all the Centers on how well they do their SR & QA functions. They used to call

them surveys and then they evolve and the terminology, functional management reviews, they had different names, process verification. But basically was to come down and see how the Centers implemented their SR & QA requirements.

For about ten (10) years we received commendations on how well our policy was up to date. We had the best survey and audit program of all the NASA Centers. I had to go around to the various Centers and teach them the mythology we used, and how we conducts surveys and audits, so those ten years were very pleasant and very cohesive functioning group. So, does that answer your question?

JESSICA OR NANCY: We last talked about changing safety and the organization, and you said you had sharks and things to talk about that – what we wanted to ask what was sort of the (inaudible) for these changes – like was it just evolution or was it certain things that....

MR. BRUCE JANSEN: What change are you talking about – central rising SR & QA?

JESSICA OR NANCY: Yeah, from centralizing and decentralizing as an overall throughout the years.

MR. BRUCE JANSEN: I was gonna try to see if there's anything that I could share with you that would be of interest. We were decentralized up until the Challenger accident. When the Challenger accident happened, and I don't have copies of these cause I didn't know you would be referencing these, but we got criticized, KSC got criticized by the Rogers Commission. I don't know how far back you all go, if you remember that. That we had a solid safety program and they felt like one of the

reasons we had a solid safety program was because it was too small. R & QA was decentralized in the organization. They didn't like that, because R & QA were working for the people, then (inaudible) the schedules. The operations.

How can you be truly independent when you're working for the guy in charge of launching and the schedules and operations. He signing your paycheck. They didn't like that. They felt like in order to do an independent assessment of the operational people on this, people that are launching, and we needed to be taken apart. But it's a separate organization, reporting to the Center Director and to Code Q. The SNMA organization at NASA Headquarters. So they wrote us up and I think I did have an extra copy. This is what they wrote. "What has NASA done to counteract the presidential commission's conclusions of the silent safety program?" And I got all the responses. This is about 1987, and that's yours. Not, what only is NASA's doing, but what KSC is doing. (Inaudible) on board and SR & QA, but it's a very interesting read.

When we combined this in 1987 under Gene Thomas, that put us as an independent director, and we remained like that. Now, we remained like that until about May of 2000, then I know you all have heard that that made the real KSC reorganization that we had when they took the old safety and mission director, and they broke us up and they abolished it. They put us down into the line organization. Why did they do that? For one thing the Center Director wanted to have more emphasis on safety in the line organization and he felt that was the best way to do it. Have us go into the line and, where these people can talk to us, we interface with them everyday in meetings. We become part of the team. We became part of the team for

Space Station. We worked very closely with the engineers here. Now another thing, I don't know, you may have heard this before, is the DuPont. That was a very big thing that the Center Director raised and I may have something here that would be of interest to you.

DR. ORVILLE BUTLER: Is that a part of KSC 2000?

MR. BRUCE JANSEN: That was one of the reasons we got decentralized, in my opinion. When that started in the 1990's this is the DuPont safety program that my ex-boss, Joe Reynolds gave, and you were asking about DuPont. Now do you'll know what the DuPont philosophy is? What it encompasses. DuPont says that all injuries are preventable. Management is responsible for safety. Safety doesn't happen, it's planned and all of the things that you probably have heard, safety doesn't cost, it pays.

Now, our culture, I use that term, the present KSC safety culture before we embraced DuPont, and let me - I'll just give this to you. There it is right there. That will save a lot of talking. They felt like safety was not fully integrating into the management system. Safety organization is responsible for safety. Now, when I came onboard and grew up in NASA, as I shared with you, safety was a staff function, but it was a small organization.

We felt, in the line organization that safety belongs to the safety organization, and it was their job to be a policeman to keep us safe, but unfortunately the line organization in order to get the job done sometimes, doesn't always adhere to safety requirements.

If you push safety down into the organization, and make people responsible for own safety actions and watch for the other person, they feel like that is a better way of doing business and feeling that you don't have a part of safety, that's the safety organizations job. Their responsible for safety. Their responsible to watch over us. How we do our job here, but when we got into this DuPont, we started getting more into metrics.

One of the things they share on metrics is once a month, metrics come out... Once a month they put out metrics for KSC and I got a copy of that. Let's see, yeah, here it is. This just came out today. I guess they never had that when I was with NASA. It comes out once a month by the Safety Health and Independent Assessment Organization that's issued, and that's sent to all the key directors and to the organizations and that shows exactly what DuPont was saying. How do you know you're safe unless you measure it? That's full of metrics and that also goes to NASA Headquarters.

Let's see, I think there was another thing I'll share with you, the rationale of what that culture was when we were growing up and what DuPont did to us. This is a presentation that I had to make myself and (inaudible) Gooden (phonetic). I got his name up there. (papers shuffling) Here it goes. KSC past culture. It tells you what our past culture in safety was and what we were hoping that embracing DuPont would do for us.

JESSICA OR NANCY: Unless DuPont...

MR. BRUCE JANSEN: I remember it happening in the early 90's, we started talking about it. My boss, Joe Reynolds starting going around to the various organizations that used DuPont and he called it bench marking. To look at the organizations that embraced DuPont, that talked to DuPont people, have them come down here and tell us what this new thing was on safety. So at that time we had the culture, as you can see, it's reflected there, and other subsequent pages to that show you the enhancements – they also asked us, part of the DuPont philosophy was to train our people on how to do things better. Give them safety training.

So we called, back in about 1998, we called the University of Safety and Mission Insurance where all the supervisors in Florida had to be trained, in this DuPont philosophy. That when they put together, in fact the Center Director liked it so much that he made a presentation in 1999 at the bridges. He was our current Center Director. We changed a lot of things. Safety and health first. Safety in the line. A lot of this stuff was (inaudible) case. He was big on safety and health first. This tells them we have Safety Day. Everything, we stand-down. I was the Chairman of the 1999 Safety Day. That was exciting. Big job. Everything shuts down with the Air Force. This gives you a great presentation that we gave on Q facts. Presentation and evaluation technique and that's the presentation he gave. That got a lot of things that probably covers some of the questions you were going to ask. It's got a lot in it. Got a lot of metrics, which E-pass was gonna do for us. How are we were going to implement DuPont? So we've had a lot of changes. Now is this document, is this what Shannon (inaudible) put together?

DR. ORVILLE BUTLER: Which one now? Which document?

MR. BRUCE JANSEN: This one right here.

DR. ORVILLE BUTLER: That's Tom Breakfield. Oh, okay,

MR. BRUCE JANSEN: That's probably the mid-90's, cause I'll say I joined Joe Reynolds as his Deputy Director in April 1995. Maybe you remember this, I'm talking about '96 – '97, now I didn't put this together, another person in this safety organization put it together, but as you can see in Mr. Braden's (phonetic) handout, he brings about 1,200 people who were trained at the University of Safety and Mission Assurance. So, he's taken a lot of credit for all the time and work that was done in this with a checklist of what Gene (inaudible) was gonna do for us. All that's in there. That's the origin of it. I don't know if anybody's every shared this with you but this is really some good stuff in safety. It's hard to kick all this safety culture off on what DuPont was supposed to do for us.

JESSICA OR NANCY: Well what you're saying was the main... (entire question was inaudible – muffled.)

MR. BRUCE JANSEN: We kept hearing more and more about it from Code Q. SM&A organization. (Inaudible), I believe was the administrator back then and he was talking about the DuPont culture. We need to get safety ingrained in the people. We need to get safety and health first as a guiding principal, so DuPont kept doubling up so all of a sudden its starting filtering down into the Centers. So the Center Director started learning more and more about DuPont. He said this is pretty good

philosophy so they paid DuPont people to come back, talk to management. What is this DuPont philosophy. You'll see a lot of this is in the handout I just gave you.

Breakfield, my Director at the time, was told to implement this. How are we gonna train all of our people in the DuPont philosophy, so they put this book together. We started training. We had one (1) course for supervisors and one (1) course for employees. That's probably the supervisor one there.

JESSICA OR NANCY: I noticed that you said that what DuPont was supposed to do for us. Is that in the (inaudible)?

MR. BRUCE JANSEN: No, I think it was - I think it did migrate safety into the workforce and before I don't really think we really had that emphasis. Now what they had also - I don't know if you've seen these little handbooks - this is something, I think this is like the second or third revision, which is supposed to be the most recent one. But if you look at this it's got the agency safety initiative in there, which Dan Golden originated back in the early '90's. It's got safety and health first as our guiding principal. It's got safety and health policy in it. It's got the goals of safety for KSC. It's a neat little book. It's got everything in there that you'd want to know.

You know why we came up with this VPP - Voluntary Production Program. Each employee got a copy of this, cause we wanted to be star certified in safety and health. That's a neat book.

JESSICA OR NANCY: So you would say that it's become a culture?

MR. BRUCE JANSEN: It was one way of changing the safety color from that and feeling that the safety organization was looking out after us instead of

having us responsible for our safety and having us responsible to look out after our employees. That was one way – DuPont was one avenue to do it, at that time. Mr. Golden, our administrator was exposed to it, liked it, and said I think it's something the Centers, NASA Centers, could use. So that's how we got started.

JESSICA OR NANCY: Okay, so you got started by NASA not by KSC?

MR. BRUCE JANSEN: By NASA. It filtered down to Kennedy Space Center. We were just one of the Centers that had to implement it.

JESSICA OR NANCY: Is it still being implemented now?

MR. BRUCE JANSEN: Yeah, you could see it's visible in that this handbook's got a lot of the catch phrases. That the DuPont culture, were now in the fine organizations which DuPont recommends, that the supervisor's are responsible for safety and their people, and their environment, all that's prevalent right now. In the handbook, G-pass. There were safety counsels and boards. Do you know about the Center Director having this quarter safety and health counsel meeting? He has those once a quarter, which I attend. This is the last one that we attended. Actions are tracked and we meet every quarter on the fourth floor at the Headquarters building. Presentations are given every quarter.

Have you talked to Bert, or do you know him? He's the Associate Director of Safety. He's the safety (inaudible) for Kennedy Space Center. He has a safety Admission Assurance Board that meets once a month, which all the division chiefs and SM&A from the shuttle, from the Space Station, for spaceport technology, we all meet once a month. We all talk about mutual safety problems. Mission assurance problems.

That's one of the boards that we have. We have a lot of boards. All those, by the way, are talked about in here. The handbook.

I don't know how much exposure, have you talked to anybody in SHIAO yet – the Safety Health Independent Assessment Organization, headed up by I think it's Oscar Toledo (phonetic), I think he's the acting and Bert (inaudible). Ok, now Shannon is the ex-director but she's got (inaudible) over to space claims, she's in charge of that. By now, Oscar Toledo (phonetic) is acting and they haven't designated anybody yet, and I think what their doing is waiting for the Columbia accident investigation board to come out, a report which is supposed to come out, last thing I heard was the first week in September. I think until that report comes out with all it's recommendations and what we're supposed to do. Is SM&A gonna be impacted? Good question. Don't know yet. Are we gonna be centralized again? Or are we gonna remain status quo? Don't know, I don't know how their gonna orient their recommendations.

JESSICA OR NANCY: Any predictions about what that report will say?

MR. BRUCE JANSEN: Well from what I've heard they feel that the safety organization on the shuttle said of the house was not very vocal and we're almost back to the old phrase, the Challenger, the silent safety program. I don't think on the shuttle side of the house they thought they were strong enough, or manned enough. That's not saying its their fault, we're just saying there's a deficiency there. So there gonna have to beef that up. Have more safety people, have more checks and balances. See over here, on his Space Station, our organization is more hands on.

Floor type people. We're more active. We have an organization stacked (or staffed) up for safety. I owe you an organizational chart which I will give you shortly. In fact, I'll give it to you now. This is my organization, you can see I have safety assurance stack. And this tells you, by the way, everything I do. It's got all my responsibilities, my delineation responsibilities, phone numbers, everything. Metrics I keep. Shuttle really doesn't have a safety organization, and their not very strong and vocal. Now, that's just the way they happen to be. I'm more hands on oriented over here at the Space Station.

I got all these experiments with the payloads. We work right out there on the floor. I don't think the shuttle side of the house does that. Not only in safety where they don't have a lot of safety engineers, I do. I got safety engineering and safety specialists. As you can see on the right hand side, I've got safety engineers to.

DR. ORVILLE BUTLER: When you say you work right out on the floor.

MR. BRUCE JANSEN: We're out there calling the shots, watching the people, making sure procedures are done.

DR. ORVILLE BUTLER: So it's a regularity work or is it a safety design work?

MR. BRUCE JANSEN: It's processing work. Actually going out there making sure the work environment is safe, procedures are followed. The Japanese and the international partners that come here, that watch on TV, sometimes we'll see them up there climbing on the scaffolding. Cause, you know, I don't have a lot of people, I can be there twenty-four hours a day, so sometimes I've seen people watching them on

the monitor and one of my guys will come and say, Bruce, turn the TV on. So we turn the TV on, and show some of the contractors or international people up there doing safety violations. Stepping on stuff they shouldn't be, so we have to go down and, ut-oh, you don't do that.

So, we are very – we work with our contractor, which is called COAPPS, Check Out Assembly Payload Processing Services Contractor. We're very close, and they have their own safety organization to make sure our people are safe, procedures are followed, we follow OSHA regulations, processing safety. We do all that. I don't think the shuttle side of the house does that, which is a completely different organization. I'm not saying their completely wrong, it's just that they don't do that. It's a different out there.

DR. ORVILLE BUTLER: When did you begin to do that here?

MR. BRUCE JANSEN: We've always done that and I don't know. The only thing I can think of Dr. Butler is that maybe they, over time, we're starting to get now into politics and a little personal observation. The shuttle, a lot of people feel that is standard. I mean, that's a routine operation over there. Let the contractor do it. They know what their doing.

Over here all these (inaudible) load and experiments are different. Each one is unique so we don't let our contractors, just turn it over to them, and say okay, and we'll provide oversight. We don't do that. We work directly with the contractor and our engineers are the floor people here. So that's the reason I'm saying we're more hands

on. Over there, there's more oversight. Stand back and watch the contractor. If they notice anything different, then they'll say so.

DR. ORVILLE BUTLER: It hat it almost sounds like going back to pre-shuttle when you had launch vehicles organization and spacecraft.

MR. BRUCE JANSEN: That's correct, but we had a lot of successful launches. What happens when you have a lot of successful launches? You get complacent.

DR. ORVILLE BUTLER: Do you see launch vehicle which was the word (inaudible), that was more supervisory and contractor handled the project, verses space vehicle where there's more interaction between the two (2) groups. Do you see those two (2) cultures still having their sub-groups throughout the Center?

MR. BRUCE JANSEN: Yep. I would say, Yes.

DR. ORVILLE BUTLER: And where would you see those in terms of safety design and?

MR. BRUCE JANSEN: I'd like to see safety in the front. Right at the beginning, so the project can work in line with add on (inaudible). Alpha to Omega, from the beginning to the end. I don't think that's done right now.

DR. ORVILLE BUTLER: How would you see that manifested differently in say, people coming out, spacecraft tradition, where people coming out of the launch vehicle tradition?

MR. BRUCE JANSEN: Now when you say spacecraft and launch vehicle, they used to have that organizational identity – they had a spacecraft

organization and a launch vehicle operation. And they had SM&A built right into both of them. They were in the line organization at the time. Is that what you're referring to?

DR. ORVILLE BUTLER: Yep.

MR. BRUCE JANSEN: What are you looking for?

DR. ORVILLE BUTLER: Well, spacecraft people.

MR. BRUCE JANSEN: I didn't work spacecraft. I worked.

DR. ORVILLE BUTLER: Spacecraft people; some have described as being more hands on, more interaction with the contractor, less of a German engineering tradition. If they had a problem, they worked twenty-four hours. Ernie Reyes has talked about the difference, that the launch vehicle people didn't have headlights in their cars, you know they had to go home at 5:00 o'clock. Sort of a joke but.

MR. BRUCE JANSEN: Ah yeah, I think I know what he's alluding to. I didn't really work in... I didn't have anything to do with safety. I was more of a tech assistant.

DR. ORVILLE BUTLER: Uh-huh.

MR. BRUCE JANSEN: I'm not sure I agree with Ernie's statement, cause I remember LV old people working a lot of hours, but I will say that LVO's called the shots. They didn't let the contractor. When we were in LVO, we told the contractor what to do and he did it. Spacecraft, I'm not sure, maybe they were like you said, a little different. More interaction.

DR. ORVILLE BUTLER: Out at the Marshall culture, were the Marshall culture developed the design and manufacturing process (inaudible) the contractor, versus the Langley culture, where the Langley culture, and then Johnson contracted out the spacecraft and then worked with them on the design.

MR. BRUCE JANSEN: Okay, I wasn't didn't have much exposure to that side of the house. Okay so I don't really.

DR. ORVILLE BUTLER: You don't still see those two (2), those differences.

MR. BRUCE JANSEN: We're talking back in the 70's. That's when they had a spacecraft and LVO. Late 70's, so they were, I think done away with their combined.

DR. ORVILLE BUTLER: With the beginning of Shuttle?

MR. BRUCE JANSEN: In the shuttle. That's correct, so that would be the late 90's. 1980's. I didn't think people still remembered that. Spacecraft and LVO philosophy. There was an amount of friction in that when they combined the two (2) organizations. Because it was a different culture.

DR. ORVILLE BUTLER: You said you began as quality assurance. Do you remember what quality engineers were called back then?

MR. BRUCE JANSEN: I thought we were called quality engineers, frogs, is that what you were saying?

DR. ORVILLE BUTLER: Uh-huh.

MR. BRUCE JANSEN: I heard that term before, sounds like an Ernie Reyes' statement. In fact, he used have a big ceramic frog he's carry around with him.

DR. ORVILLE BUTLER: He said when he became head of Quality.

MR. BRUCE JANSEN: He was the QA Director for many years and that's when I was a survey and audit staff chief. I used to go in and do assessments on his organizations, and that was my exposure to him. But those were fun days. Ernie was fun to work with, he was a funny person. I'm glad you talked to him. He's got a lot of history.

VPP, did you all know what that was? That safety oriented. Okay, to be star certified, did they say why we're doing with VPP and all the ins and outs of that, like it's supposed to.

DR. ORVILLE BUTLER: What does it mean to be star certified?

MR. BRUCE JANSEN: It means that you have a real class safety and health organization.

DR. ORVILLE BUTLER: And who gets the certification?

MR. BRUCE JANSEN: OSHA. In fact, I got a little brochure for you. It tells you what is VPP, what will I have to do, what are the benefits, what are the 19 elements and that was we were assessed to. The 19 elements of VPP, how can I participate? This is a little handout they gave us. There was a letter that Mr. Bridges (phonetic) sent out back in April of 2003 stating that we made it and he wanted to thank everybody to their attention to safety. I'll let you have this. I don't think you have it. And there were some brochures put out on what is VPP, what are the benefits

and how do you become VPP certified, so for what's its worth, I'll share that with you. What is star certification mean? It's a nice little compilation there of what it's all about.

Here is a good little synopsis by NASA Headquarters on Agency Safety initiatives. Where did that come from? You've heard the term ASI, Agency Safety Initiative. What started that. How is VPP involved in that? It's got some historical stuff in there related to safety.

JESSICA OR NANCY: In order to be star certified do you have to, what exactly has to be done?

MR. BRUCE JANSEN: You got to have a lot of metrics. You got to have a history of having top notch safety organization ingrained, not only in your civil service people, but in your contractors. They have to know certain answers to questions. Okay, so what are those questions. Got them right here for you. These are the handouts they gave us. What are the safety and health hazards of your job? What type of safety and health training have you received? And we all had to take five (5) core courses in safety. What happens if management disobeys a company safety rule? What do you do as an employee? What does VPP mean to you? How do your supervisors demonstrate safety?

JESSICA OR NANCY: Did OSHA come here and observe?

MR. BRUCE JANSEN: They came here and stayed here a week with about 13 people.

JESSICA OR NANCY: And they just randomly?

MR. BRUCE JANSEN: They went all over the Center. Looked at how we handled safety problems, they looked for safety hazards. They went to this building, all the buildings. They looked for exit signs and electrical cords and they interviewed 80 people, I believe. They just randomly selected 80 people and went over some of the questions with them. How do you feel about safety at Kennedy Space Center? Do you feel your management is in the forefront of being safety oriented? What are the courses you've had in safety? If you have a safety problem, how do you report it? How do you handle it?

Like Boeing for instance, Boeing has a program called the Stop-it Program. That's my contractor. Each person, each Boeing employee carries this card and if he feels like an operation that he is involved in downstairs is unsafe or he doesn't understand it or he feels like their exposing him to a safety hazard, he reaches in there and says, stop this process, we're not gonna do it anymore until we talk. So that what they call it. They call it the Stop Program. It's got a little check list on the back, and their serious. If some of their employees have actually felt uneasy about doing business down there or being exposed to a hazard, they take that card and pull it. Everything stops. Kind of interesting.

JESSICA OR NANCY: Boeing?

MR. BRUCE JANSEN: That's Boeing. That's called the Boeing Stop Program. Now that is really safety when you got employees out there that can stop an operation. You have a pretty strong safety culture to get away from stopping everything, everything come to a stop and your schedule's messed up and they're

serious about this. We're all serious about this. I don't want anybody hurt in this organization. In the UV, Pip Colon's (phonetic) organization. I'm responsible for safety along with the rest of the people, but I don't want to do anything wrong that would negate what the contractors are doing and their culture and KSC is supposed to be doing. We take safety very seriously.

DR. ORVILLE BUTLER: And how do you handle it if somebody abuses that for some reason?

MR. BRUCE JANSEN: You mean uses it capriciously?

DR. ORVILLE BUTLER: Yes, uses it capriciously?

MR. BRUCE JANSEN: That's not, Dr. Butler, you know that's a good question. I thought maybe the same thing. What would people sort of do to put that out there in a foolish way. That has not happened yet. That surprises me.

JESSICA OR NANCY: How about conversely? Has anyone like inhibited to use it? Or is there reluctance?

MR. BRUCE JANSEN: No. One of the things in the DuPont program that's been totally embraced is that no disciplinary action will be taken against an employee. If some person says it's unsafe to continue, he will not take discipline action against that person, cause he feels like he's doing the right thing. How many times does he throw his card out and they overrule him or ignore what he's saying. People would quit using this. And the purpose is to keep everybody safe. A very successful program. Also Boeing has what they call a Safety stand-down. Anywhere from three (3) hours to two (2) hours. It varies. Where they'll shut down their whole operation

and all the people will gather and talk safety. How can we make this job safer? What can we do as a team to exchange safety tips and communications and things of that nature. And they call that stand-down, safety stand-down.

JESSICA OR NANCY: Is that a response to the use of card or is that like a pow-wow?

MR. BRUCE JANSEN: It's a pow-wow.

JESSICA OR NANCY: How often does that happen?

MR. BRUCE JANSEN: They have them about once a week. I don't know what the porosity is now. It may be once a month now. I'm not sure. Are you going to talk to any Boeing safety people? I'm just curious.

DR. ORVILLE BUTLER: I don't know that we have any scheduled. If you have some names, you could certainly.

MR. BRUCE JANSEN: Well, Mike Hoy is my counterpart – H-O-Y. And he's the director of safety and mission assurance for Boeing and he can go into a lot of depth on their stand down's. Like I told you, the Stop Program. What brought that on. What is John Elbaughn (phonetic) who is the program manager. How does he feel about safety? Space Station. What are their safety programs? He could give you a wealth of information, cause this is probably new to you and I doubt if you've heard this.

DR. ORVILLE BUTLER: Now you talked a lot about different programs and you mentioned Metrics. Presumably you're metrics we so that these programs are successful because there has been a decline in...

MR. BRUCE JANSEN: Time, frequency, severity. In fact, that handout I gave you on my organization should have my metrics. SM&A and I included my metrics in there too. We have to get with Tip Colon (phonetic) once a month and go over these. And then Boeing has their own metrics and then KSC has metrics which they take from all the organizations and put in that monthly book that I gave you that just came out today.

DR. ORVILLE BUTLER: Is there any core of analysis, that looking at the cost of these programs, that there's a savings that come as we built up a decline in lost time or anything like that?

MR. BRUCE JANSEN: I haven't seen that. I don't know. Boeing has a very viable program on close calls and this is... There's a whole bunch of.... I'll let you peruse at your leisure, but close calls is anything like a person, like he slips on a floor, could be as minute as that, or a close call, out on the floor where something can almost hit them. They are required to write a close call on that. And then they do an investigation to see if there's any lessons learned from that close call and Mr. Bridges is very keen on reporting close calls. Not only from Boeing over here, but USA and all the other contractors have a close call program. So if you hear that term, that just means that something that could have been potentially dangerous to a person or equipment and then they got to general a close call. There may be some examples of close calls in my handout that I gave you.

But I also keep metrics on it from the various contractors and they also, I think, tell me Nancy, I think one of your questions that you gave me was: Is there one major

cause of accidents you can identify with? The answer to that is, Yes. And that would be, not following procedures. That's the number one cause – not paying attention to detail. In fact, I have some studies that we did on some shuttle incidents that we did in 1998 that my boss, Phil Reynolds did, they had about seven (7) shuttle incidents. The Center Director at that time passed the Director of Safety who was Joe Harris (phonetic), my boss to do a study and find out how come we had so many...What were the categories, what were the real causes, how can we prevent them.

There's your top causes and I don't think it's changed. Inattention to detail and not following procedures. The second was inadequate procedure. Third one would be lack of training and experience and I think.

JESSICA OR NANCY: Off shift work?

MR. BRUCE JANSEN: Off shift work. Well they do things on second shift, third shift. They don't follow procedures as well as they do on first shift. Now why is that – maybe cause it's more people. We try to cut corners on the off shift work. It's kind of strange. That's the first time I'd seen that. It's all explained in there.

JESSICA OR NANCY: Okay. You were talking before about the Stop and things that were initiated, what kind of programs does your office do if you see unsafe behavior or what do you?

MR. BRUCE JANSEN: We at least, stop it. Now there was a letter, I thought I had, I'll share with you on what chain do we use. Try to work with management and then you go to the (inaudible) There's some others, you can have these too. These are some safety things that, I don't know if you've seen those.

(difficult to understand – shuffling papers) Here it is. What do you do to report hazards and safety concerns? And this was put out, everybody supposed to know this. I thought Mr. Bridges did a nice job of putting this out to all the KSC and contractor employees, and that's your chain. That's what we're supposed to do, Nancy.

JESSICA OR NANCY: Did you organization have anything specifically like this Stop or any other program for the Space Station itself? Or is it just NASA reporting?

MR. BRUCE JANSEN: We have a NASA surveillance record that we put out. If a contractor does something dumb or stupid, we not only stop the job, but then we follow up with the paperwork. We write them up and they have to respond to us as to what corrective action their taken. Also, I've got my safety organization, when you see all these close calls. Dr. Butler, did you see there, the contractor does an investigation and any lessons learned from that and what was the root cause of the close call or something like, it went from a close call to a mishap. We look at those reports to make sure that they were effectively closed out. That that was the root cause. That they did the appropriate investigation and analysis. We look at those to make sure they did a good job. And those examples again are in that handout that I gave you of my organization, I think I even gave you some examples in the reports as to what we do. The methodology we use. We're the one that's got this Safety Admission – do you have it. I tried to give you as much, as many examples..... Yeah, here it is. There's a section in here as to what we look at.

If the contractor does not do what he should do, we write up an ASAS safety surveillance record, write 'em up, and he has to respond to it. We also, when we have payload customers coming in with their payloads and we work with them to make sure everything is done in a safe manner. At the end we give them a customer survey form to fill out on us. Were we helpful, were we beneficial, did we know our job. So we do get feedback on how well we do, and that's in here also. Five million outstanding, four, three, two, one.

The most call audit form instructions. This is where people go out. Here's an example of a close call form that Boeing uses and we go back and make sure that they did a good analysis. So we always put these forms out. So we've got a pretty comprehensive schedule program, and all these examples are in there.

JESSICA OR NANCY: Do other contractors have comparable safety programs as Boeing or do they, maybe, does Boeing set the standard for other contractors?

MR. BRUCE JANSEN: I think Boeing sets the standard. You may get disagreement from USA, but I think Boeing's got the best safety organization at KSC. Just like I feel I got the best safety organization for civil service. And we've been told that by NASA Headquarters. That we are head and shoulders above shuttle and any other SM&A organizations, so I'm very proud of this organization. I think Ted, probably, he may have bragged this organization up to. He might even allude to (inaudible), but he wants us to stay over here. He doesn't want us to go back and decentralized again. He's told me that. He likes us over here working for him. Now I

don't know if the Columbia investigation is gonna go along with that. They may want to put us back into a centralized organization. Don't know yet.

JESSICA OR NANCY: Would you like to stay (inaudible)?

MR. BRUCE JANSEN: I knew you were gonna ask me that. Well, let me just share something with you. I've worked in both worlds. Being decentralized and centralized. My personal opinion is I like centralization better. I think maybe the Rogers Commission did have a good rationale when they said we, SM&A, should not be working for the people in charge of the schedule and operations. Now, I'm in a unique position. Dr. Butler I think you've known me to use Tip several times. Tip is a very dynamic top notch leader. Probably, in my opinion, the best at KSC. He's great to work for, but I have seen in my pervious years, other SM&A people working for directors that weren't as good as Tip and they had SM&A under their thumb. Now that's not the way it's supposed to be. We're supposed to be a check and balance, independent. We should be having the director in charge of operations and scheduling sign our paycheck and my performance plan.

So I think that realistically, we probably ought to be centralized. The independent of the organizations that were doing audits on, surveys on, and working for, I don't think Tip, in this case should be signing my performance plan. I think the guy should be my boss, and like it used to be in the old days – Gene Thomas, Al Parrish, those people, should be doing it. But that's just my personal opinion. Is it working? Over here, yes, but it also, if I had somebody that liked to maintain a schedule and didn't want SM&A to be a (inaudible) of the operation. Schedule driven,

that's what the (inaudible) Commission used to say when they had bosses that were schedule driven. Don't put any barriers out there. That could be bad news. Tip's never done that. He's a unique person. He knows that. How many meetings did you have with him?

JESSICA OR NANCY: We've had three (3) and got the Space Station, so we'll probably come back for that.

MR. BRUCE JANSEN: Okay. He can talk for hours. He's very interesting to talk to.

DR. ORVILLE BUTLER: Also (inaudible) theories.

MR. BRUCE JANSEN: Yes, he's been here a long time, and he's worked in the shuttle side of the house, Space Station, very conversant with methodology on both sides of the world. Has a wealth of information so I'm glad that you're talking to 'em.

DR. ORVILLE BUTLER: Now you say that you've gone through these stages of centralization and decentralization with the Rogers Commission, suggesting centralization KSC 2000. Having some decentralization, what sort of pressures drive – if accidents are driving centralization, what are the.....?

MR. BRUCE JANSEN: Well, DuPont ought to draw decentralization.

DR. ORVILLE BUTLER: Okay.

MR. BRUCE JANSEN: Put safety in the line organization and they thought that was the best way to do it. And Mr. Bridges liked that philosophy. Rogers Commission would disagree with him.

DR. ORVILLE BUTLER: Um-hum.

MR. BRUCE JANSEN: But you also got to keep in mind that we had a lot of successes, from Challenger. So we had a good track record, and they had to decide what's the best way to infuse safety into the line. They thought that was putting us in the line. Now, is that good or bad? In my case, it's good, it's working. But now is this investigation board gonna agree with that because we know they are looking at the Rogers Commission report. They did get copies of that. Where it said, don't do that. Don't know which way their gonna go. Be very interesting.

Here's a letter that I wrote also for Mr. Bridges back in 1998. How can NASA become the number one safety organization in the world? He asked me that. This is old stuff, but it's history. I guess that's what you like.

JESSICA OR NANCY: I have a question concerning (inaudible) on your resume. I just want you to explain to me, the 3,000 hours sick leave question, which I saw on your wall over there, which I'm assuming you didn't ever take any sick time, does that compare at all to the (inaudible) safety award for no loss time accidents?

MR. BRUCE JANSEN: No, no, the 3,000 hours club means that you accumulated, and this was back in '97. I got 3,600 hours now. That just means you don't take any sick leave. Instead of taking sick leave when I was sick, I took annual leave.

JESSICA OR NANCY: And what's the difference?

MR. BRUCE JANSEN: Annual leave, a KSC employee, gets like 208 hours a year to use or lose.

JESSICA OR NANCY: It's scheduled with that included, or does that include vacation time.

MR. BRUCE JANSEN: That includes your vacation time. If I don't use my 208 hours this year, I can't carry it over into next year. I'll lose it. Now, sick leave. How'd you accumulate so much? I get about 108 hours of sick leave a year. Civil Service. I can carry that over. I'm one of the old CSR, civil service retirement system. You can carry that over, every year and accumulate it. Now what does that do for you? When I retire, they will take my 3,600 hours of sick leave and they will determine how many hours of time that is, if I was still here at work, they would have that on my retirement and I will get credit for that. Say I have 38 years of service of service, which I almost do. They would take my, what is 3,600 hours a year and nine (9) months, maybe, ten (10) months. They'll add that on to my retirement and it's just like I was here another year and nine (9), ten (10) months. So I'll have close to 40 years when I retire. That's what your retirement compensation is based on. How many years have you worked here for the Government. So it's an advantage.

Now if you know anything about the FERS, Federal Employment Retirement System, which I think a lot of the people are under now that work for civil service. They can't get credit for their sick leave. When they retire and they have 3,600 hours, they lose it. Like it never existed.

JESSICA OR NANCY: Yeah I know the Government workforce, you do not accumulate sick time. I assume that's what it meant that you work....

MR. BRUCE JANSEN: Every five (5) years they used to give you certificate. They quit doing that. In 97 or 98, so I don't have the 3,500. That's the last one they gave. It's pretty neat.

JESSICA OR NANCY: Yeah.

MR. BRUCE JANSEN: What does that do? Well, it tells me I don't want to use my sick time. My first boss forewarned me about that. He said, Bruce don't use your sick leave, It like putting money in the bank. When you get old, if you have an heart attack or a stroke or something, you're gonna need that sick leave and you'll get your regular paycheck as long as that sick leave -- you have enough sick leave. Fortunately for me, I've never had that, but now I get all these hours and they just tack it on to my years, just like I was here another two (2) years. Good deal.

JESSICA OR NANCY: Yeah.

MR. BRUCE JANSEN: But FERS, they don't have that. You may hear that term, Federal Employee Retirement System. They don't get credit for sick leave. To me that's not good. That gives you a tendency to go ahead and use your sick leave up. You're not gonna get credit for it when you retire.

JESSICA OR NANCY: Yeah, exactly.

MR. BRUCE JANSEN: So, I don't like that system. Let's see if there is anything else. I think I gave you, you know we have a SM&A policy directory. KNPD 8700 Form 1. When I first joined NASA they had a management instruction from what

the policy was for safety and mission assurance. Over the years, I think about 1980's, we had a paperwork reduction, they cancelled that. So now, thanks to Mr. Bridges we do have a policy on SM&A at the Center. Let's see. (shuffling papers). Dr. Butler have you all heard of the NASA Safety Reporting System, NSRS – where somebody feels uncomfortable with something and they don't feel like their manager is giving it the attention it's due? They can always write and NSRS. Okay. You want this.

JESSICA OR NANCY: Sure.

MR. BRUCE JANSEN: Let's see, I have inundated you with a lot of papers. You may have to lay back and study it. The 19 major elements from VPP that we got critiqued to, that's this. I think I have hit all the handouts. I've burned up the copy machine. I know there is so much stuff I throw at you all and I know it's hard, even with the recorder. What did he say, what did he mean by that? At least I tried to share the documentation, but you can go back and study it. Keep it.

JESSICA OR NANCY: Thank you. Is there any final thought you have about safety, your impressions of it, anything things that have worked with the program or anything that you think would be an improvement or any thoughts?

MR. BRUCE JANSEN: Well, I think over the years I've been here we've made leaps and bounds in improvements in safety. Through all these checks and balances we had. The safety boards. The VPP, employee handbooks. Stop Program. It's almost like when I first came here as I stated before, safety was, safety was the safety officers responsibility. It was up to them to catch us doing things we weren't supposed to be doing in the safety world. That's all changed. We're responsible for

our own safety. We're responsible for the safety of the people here. It's not just an SM&A organization responsibility anymore, it's the employee responsibility and management. There's been a lot of emphasis on managers doing walk downs, most walk downs of their work environment. Being responsible for their safety of their people and I think that we have come from tremendous strides in the safety arena of make a safe work environment. Having a world class safety organization at KSC which is substantiated by the VPP certification, which we've now obtained.

I hate to see Mr. Bridges leave. He was very safety oriented. He did a lot of plusses and improvements in safety. He was very safety conscience. In fact, he was almost fanatical about safety. And I think that's great because that means he cares about the work force and about the people, so we're gonna miss him. Again, I think Mr. Kennedy, He's gonna take his place and also have the culture and ingrained in him. So it's. You know you look back over all these years and see all you young faces, you're not that old either, and..... I don't know, you look pretty young. I'm 60 going on 61 and these two (2) young kids, and you know NASA is getting hit right now and if you've looked at some of the videos of O'Keefe or heard some of the news, NASA is taking a beating now as we did in the Apollo fire in 67. The Challenger accident, but look at all the positive things we've done.

DR. ORVILLE BUTLER: Why do you think NASA is getting hit over the head?

MR. BRUCE JANSEN: Cause their saying that we should not have launched with all the no checks and balances, and the solid needed more safety checks

and balances, we didn't do it. When the investigation report comes out, we'll see where the fault lies. But again, I think Congress is to blame for some of it, because they didn't give us enough money to do the job and they didn't give us enough money in the Challenger. I mean, we got a lot of money after the Apollo fire to make improvements. To make safety enhancements. Then as more success we had, then the less money, the less people, do more with less. Challenger accident, they beefed us up again in safety and mission assurance. And then over a period of time again, when we got so successful, we got less money. Do more with less and Congress kept cutting the budget or at least wouldn't give us the money we wanted to make shuttle upgrades and enhancements. So, you know, when they point at us, come of those fingers are pointed right back at them too.

In ASAP, Aerospace Safety Adaptor Committee. Their sort of the independent format to the Challenger accident. You go around and make sure NASA is doing the right job for safety and they put reports out once a year, which I can give you, if you're interested. They have been saying the same thing in their reports. NASA needs more money for shuttle upgrades and enhancements to make things safer. We never got the money. So we're trying to do the best we can, I say we – NASA - to have safe flight.

We didn't want an accident. God forbid. We certainly didn't want that. We didn't want Challenger. Sometimes we overlook and don't do things as we should, but we're also human. But I think as a community, as a Nation to explore space we need the money to do the job. You can't have a space program that involves all the dangers we got with that shuttle, which is the most complicated thing ever built by man, and try

to run it on a shoestring, it's not gonna get done. Can't do it. Don't get me on the soapbox.

DR. ORVILLE BUTLER: Given the politics of funding for space exploration, the money's probably not gonna be there.

MR. BRUCE JANSEN: We hope more moneys gonna be there and more people.

DR. ORVILLE BUTLER: And if it isn't, where do you cut?

MR. BRUCE JANSEN: Those decisions are above me. Don't know. Good question. We're probably too aggressive in exploring all the planets, Space Station and Shuttle and ELV, expendable launch vehicles, did we try to do too much? I think if I remember right, when we were going to the Moon, out of the budget, the USA had, I think it was like a penny and a half of your tax dollar was going to space. Those people don't realize it – is that all we're spending on space right now, it's about half a penny. That's all out of your tax dollar, just half a penny goes to space. Is that worth the investment. Not much goes to space. What is our budget, about \$15 Billion? I think was the last figure I saw. It's not a lot of money to do all the things we want to do.

It's also an impetus to do turn things over to the contractor. In my opinion, I think that's wrong. I think the Government should take the lead and provide the check and balance to make sure the contractor's is doing a safe and adequate job. Contractors. He's a little bit different than we are. He's profit oriented, and I've seen contractors over the years I've been here, cut corners of safety and costs to meet

schedule. The Government doesn't do that. Government also, my organization finds Boeing doing things that they shouldn't do. I mean we have to lead them sometimes more aggressively, and we think they ought to be more pro-active. They aren't always proactive. We have done a lot of thing over here to make things safety when we think maybe they ought to be doing it, so I don't think we ought to be turning things over to the contractor. That's just my personal opinion.

I didn't grow up in that culture. I grew up where the Government called the shots. We provided the checks and balances. We had enough people to do the job and I think we just need to maintain that and I'm hoping the Columbia accident investigation report touches upon some of that. I know their gonna put out a report that gonna be quite thick. It's gonna be a good door stop. Volumes of it. So when you get the report, maybe some of the things that I'm sharing with you now will probably be in there, like more people, more bysypharis safety program, more aggressive safety program on NASA's part. More checks and balances on NASA's part. More involvement and that's sort of what we do over here. More hands on, more involved than they are on the shuttle side. I'm not saying that's good or bad, I'm just saying that we're more involved and it working over here.

But the report will be out, like I said, about the first week of September, was the date I heard. I'm anxiously waiting like you all are - what's gonna happen. Some of the questions about centralization and decentralization, is that gonna happen again - don't know. Tip doesn't want it to happen, he wants us to stay here. Anything else. Hope I didn't bore you too much.

JESSICA OR NANCY: No, not at all.

MR. BRUCE JANSEN: Sometimes us old people get started, you can't stop. But I think you got a lot of good data. Now what I also have are other reorganization charts. I wasn't quite sure if you wanted to go back up the charts and the people, and I have those here, if you have some time later on, if you want to look at some of this stuff.

DR. ORVILLE BUTLER: These might be very useful.

MR. BRUCE JANSEN: Some of the names I mentioned. Gene Thomas, JoAnn Morgan, all the organizational charts, the numbers and I even have more studies over there that I didn't know if they would be useful to you or not. But you're certainly welcome to come over here anytime you want to and we'll set up a little desk for you, and you can go through 'em. Hey, this is good, this is bad.

JESSICA OR NANCY: Is this ours to take?

MR. BRUCE JANSEN: Let me see about that one of a kind stuff there. I'm not sure. Yeah that's all good stuff. If you want to pursue this at your leisure this University of Safety Initiative Insurance Program was back in the mid 90's, it's here. You can certainly look at it, make copies if there's anything here for ya.

DR. ORVILLE BUTLER: Sounds good. Thank you so much for your time.

MR. BRUCE JANSEN: That was a quick hour and a half. Goes quick.

DR. ORVILLE BUTLER: We still got Tip. We met three (3) times with him. We met an hour each time.

MR. BRUCE JANSEN: Okay.

Thereupon the interview ended.