

**Mr. George Page's
Oral History
Kennedy Space Center
Held on June 25, 2001**

Interviewers: Dr. Roger Launius

Dr. Henry Dethloff,

Dr. Lee Snaples

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1 Roger Launius: OK. All right. It's the 25th of June 2001. I'm Roger Launius
2 we're interviewing George Page at the Kennedy Space Center. With me at the ta
3 addition to Mr. Page is Henry Dethloff and *and Lee Samples and* we'll be talking about KSC history and its
4 evolution over time. Thank you for joining us this afternoon.

5
6 George Page: My pleasure.

7
8 Launius: We very much appreciate your willingness to talk to us. Could you tell us
9 a little bit about your background? Where you were born, when you were born, your
10 parents, where you grew up, that sort of thing.

11
12 Page: I was born in Pittsburgh, Pennsylvania in May of 1924. I had one sister
13 and we lived there for oh maybe 4 years and then my dad got transferred to actually
14 New York City, but we lived in Connecticut. And we went up there and my dad died
15 when I was still in Junior High School and so we left there and went to Philadelphia area
16 where I had an aunt and uncle living. And it was just my mother, and sister and I. And I
17 pretty much grew up in that area, most of my things I remember from High School and
18 places like that are from around there.

19
20 Launius: OK.

21
22 Page: I enjoyed my, I guess you call it childhood, I had a lot of fun.

23

1 Launius: OK. How did you find yourself getting interested in aerospace things?

2

3 Page: Well it was...

4

5 Launius: As a boy?

6

7 Page: Well yeah, that was certainly part of it. I didn't start out saying, "Boy that's
8 something I want to do. I want to fly an airplane," or something like that. It just sort of
9 grew on me and I always liked mechanical things and after I got out of High School, of
10 course the war was coming on. And I enlisted in the Army Air Corp. That's where I got
11 interested in airplanes.

12

13 Launius: OK.

14

15 Henry Dethloff: You didn't make models when you were a kid and all of that.

16

17 Page: Yeah, I made a few.

18

19 Dethloff: You did. OK.

20

21 Page: But I wasn't very skillful at it.

22

23 Dethloff: All right.

1

2 Page: Usually too much glue on them.

3

4 Dethloff: OK. Likewise.

5

6 Page: But yeah I liked that stuff.

7

8 Launius: So did you fly then in World War II, you learned to fly, served in the Army

9 Air Corps?

10

11 Page: I was not a pilot. I was, well maintenance.

12

13 Launius: OK.

14

15 Page: And I was crew chief on mostly cargo type airplanes and I flew as a
16 member of the crew.

17

18 Launius: OK.

19

20 Page: And I enjoyed that. It was a lot of fun.

21

22 Launius: When you mustered out of the service, what did you do then?

23

1 Page: Boy, I wish I'd of had a chance to jot some of these things down.

2

3 {laughter}

4

5 Launius: Well, that's all right, you...

6

7 Dethloff: Yeah, don't worry.

8

9 Launius: ...don't worry about that. What I want to really get to is your going to
10 college and studying engineering and...

11

12 Dethloff: GI Bill and all of that.

13

14 Page: Yeah. Well I did get into that fairly quick, but I think when I first got out I'd
15 worked in some aircraft field in Harrisburg, Pennsylvania which had become my
16 hometown. In fact, I think I went in the National Guard.

17

18 Launius: OK.

19

20 Page: And then they opened up the GI Bill of Rights, which otherwise I never
21 would have gone to college because we weren't in the financial situation where we
22 could save money for that kind of stuff.

23

1 Launius: OK.

2

3 Page: And I was fortunate enough to get in under the GI Bill. And went to school
4 at Penn State.

5

6 Launius: Penn State, OK.

7

8 Page: Right. Which I thoroughly enjoyed, because in those days they used to
9 have a good football team.

10

11 Dethloff: There we go.

12

13 {laughter}

14

15 Launius: They still do.

16

17 Page: Well, this last year they didn't do so good. And while I was going to school
18 I stayed affiliated with the National Guard and I went on some tours while I was with
19 them. But gradually I got away from that and by the time I graduated I had no more
20 responsibility to them or whatever. So...

21

22 Dethloff: What did you major in, in school?

23

1 Page: Aeronautical engineering.

2

3 Dethloff: In aeronautical engineering. That was probably a very early program.

4

5 Page: Yeah it was. We were only 13 of us in the whole school.

6

7 Dethloff: And there weren't too many aeronautical programs I don't believe.

8

9 Page: No. No. Penn State had one of the earlier ones. We had 13 guys and we
10 were fairly close knit. None of us knew what the hell we were doing, but we managed to
11 get through.

12

13 Launius: When you finished college you went to work for industry I think at that
14 point.

15

16 Page: Yes.

17

18 Launius: Where did you go and what were you doing?

19

20 Page: For Westinghouse...

21

22 Launius: OK.

23

1 Page: ...in south Philadelphia. That's where they built their J-46 jet engines and
2 that was the first time I'd been associated with jets. And I learned a lot down there.
3 Westinghouse didn't have the best record in the world on jets although the early ones
4 they were probably the most outstanding with their J-34, but then as they went on from
5 there they didn't take advantage of what they had learned in the earlier ones. So the J-
6 46 was not that big a success and the J-40 which was a really big one didn't turn out to
7 be very good. So eventually Westinghouse went out of the jet engine business. Let's
8 see, where did I go from there?

9

10 Launius: Well...

11

12 Page: That's terrible. I was gonna review all of this so I'd have it down pat.

13

14 Launius: That's all right, don't worry about it. In 1957 you were working at that point
15 in industry. The Soviet Union launches Sputnik and do you have a recollection of where
16 you were or what you were doing when you first heard about that and what did you think
17 about it? Did you . . .

18

19 Page: Well, I was...

20

21 Launius: ...think it was significant?

22

1 Page: Yes. I really thought it was significant. And I guess I was as taken back
2 by it, as most other people in the business were. Because I think we Americans had
3 smugly all along assumed well we got a lock on all this technical stuff and the Russians
4 are gonna have a hell of a time beating us. But there they had beat us before we even
5 got out of the starting gate. And it took us back a good bit. I think in the long run it was
6 good for everybody. I really do.

7

8 Launius: Well the competition certainly sparked us to...

9

10 Page: Yeah.

11

12 Launius: ...to spend some money to move forward. Was there a particular point
13 where you decided that you really wanted to work in kind of space things, astronautics
14 as opposed to aeronautics?

15

16 Page: Well, yeah. As I got more time on the jet engine and it was obvious that
17 the direction that was taking was towards space. And that was a whole new ball game.
18 I was sort of swept up in it and really felt good to be a part of it.

19

20 Launius: And excited about it.

21

22 Page: Yeah.

23

1 Launius: When did you move down here to the Cape? You came down with one of
2 the corporations...

3

4 Dethloff: General Dynamics.

5

6 Launius: ...General Dynamics and...

7

8 Page: Yeah, I hired on at General Dynamics down here to work on the Atlas
9 vehicle. And I got here after they'd launched I think maybe 4 of them.

10

11 Launius: And what were you doing in that particular job, do you recall?

12

13 Page: I started out as chief of the propulsion systems on a launch pad. The way
14 we did it at General Dynamics, each launch pad had a team of engineers and
15 technicians that were responsible for the activity on their launch pad.

16

17 Launius: OK.

18

19 Page: And I had the responsibility for the engines, engineering responsibility.
20 And then from there it went on. When I left General Dynamics I was assistant test
21 conductor. Had responsibility for all missile systems.

22

1 Launius: OK. All right. And when you left General Dynamics you came to work for
2 NASA at that point. That was '63 I think, wasn't it?

3

4 Page: Yes.

5

6 Launius: Right. You started working on the Gemini Program?

7

8 Page: Yes.

9

10 Launius: What was, well I guess let's back up for just a second and ask you the
11 next question, which is where were you and the people that you worked with, in 1961
12 Kennedy announces we're gonna go to the moon by the end of the decade. That
13 seems to have been a turning point.

14

15 Page: We all thought he was crazy.

16

17 Launius: Well that's what I wanted to find out. Why'd you think that?

18

19 Page: Oh, hell, I mean back in those days to have one of those things perform
20 for a complete mission was rather miraculous.

21

22 {laughter}

23

1 Launius: OK.

2

3 Page: So, yeah when he announced that, well he's got a lot of guts to... we just
4 had trouble being able to see that because our hardware is sometimes very unforgiving.
5 But, thank God we had people like him to steer us and get us going. Otherwise we'd
6 still be sitting back there. But that rather surprised a lot of us.

7

8 Launius: At General Dynamics and the other contractors, how did they relate to the
9 civil servant people at NASA and you were obviously working with probably the military
10 folks as well. What kind of relationships did you all have?

11

12 Page: It varied. A lot of it was based on the individuals involved. You know you
13 could have a contractor who was a horse's ass and you could have a government man
14 who was a horse's ass and you just worked around them.

15

16 Launius: So a lot of it was based on personal abilities...

17

18 Page: Yes. Absolutely.

19

20 Launius: ...interpersonal skills.

21

22 Page: Absolutely.

23

1 Launius: OK. And you saw the same thing I guess when you moved over to the
2 government side. It was essentially identical?

3

4 Page: Yeah I went in from the reverse side.

5

6 Launius: How do you, in terms of the Gemini Program that you were working on for
7 NASA, how do you feel about that today looking back on it? It obviously was a success.
8 I'm sure it was hard to get there and I know there were lots of problems. Can you
9 reflect on some of those challenges that you had to deal with and how you overcame
10 them?

11

12 Page: Well I think NASA as a whole did a superb job on Gemini. Because we
13 were cutting a lot of unplowed ground.

14

15 Launius: OK.

16

17 Page: And we were learning a lot as we went along.

18

19 Launius: OK.

20

21 Page: And I really thought NASA handled it well. And I thought the NASA
22 management at the upper levels was superb.

23

1 Launius: OK.

2

3 Page: I'm not speaking for the financial end of it or anything because we never
4 were real good at that. But I do think that the overall NASA management was terrific.

5

6 Launius: OK. One of those NASA managers was Kurt Debus.

7

8 Page: Yes.

9

10 Launius: Do you have any recollections of him? How was he to deal with?

11

12 Page: He was a straight guy. I wasn't that close to him, but I did know him on a
13 first name basis and had sat in a number of meetings with him. But he asked the right
14 questions and he held everybody to the mark.

15

16 Launius: Was he pretty tough on people?

17

18 Page: He could be.

19

20 Launius: OK. If he felt you hadn't done your homework.

21

22 Page: Yeah, but he was fair.

23

1 Launius: OK. Was he a personable person? How did he feel about risk taking?
2 Which is a subject that's of great significance I think.

3
4 Page: I've never discussed that subject with him. But you know from the way we
5 progressed and everything, I felt that he did it the way he had to. That he accepted
6 certain risks and he went into it knowing they were there.

7
8 Launius: And the rest of you working on the project, I mean what was your sense...
9 if you lost, obviously if you lost a flight, a mission, was that something that you all
10 thought may well happen?

11
12 Page: Oh yeah.

13
14 Launius: How did you assess the risks and then try to deal with it I guess is the real
15 question.

16
17 Page: Well we knew we were dealing with a set of hardware that could come
18 apart at any second and we really didn't have that much experience with it yet to be
19 able to sit there comfortably and say, "Well hell, light it off. It'll burn for 10 minutes or
20 whatever it takes and it won't have any problem."

21
22 Launius: OK.

23

1 Page: So we knew that we were working with hardware that had yet to be
2 proven. And I guess that was the toughest part of it because you worked your rear-end
3 off and you got down to T-0 and after that you didn't know what was gonna happen.

4
5 Launius: You build a base... or at least I think this is the case, every time you flew
6 one of the rockets in this case Titans were launching Geminis, you got a little better
7 base of knowledge.

8
9 Page: Oh yeah.

10
11 Launius: A lot of people have suggested...

12
13 Page: We learned from every one.

14
15 Launius: Right.

16
17 Page: Every time you launched one you'd wind up making changes to your
18 countdown, your preparation, your checkout and everything to take into account what
19 you ran into.

20
21 Launius: OK.

22
23 Page: So it was a real learning cycle.

1 

2 Launius: And there seems to be a very great and significant change. I ran the
3 numbers on launch failures for NASA up to 1975. And what I found was from the
4 creation of NASA until 1963 there were 30% that failed. From '63 on it's about 6% that
5 failed. That's for everything regardless of the rocket and regardless of whether or not
6 it's got people...

7

8 Page: I've never heard those figures before.

9

10 Launius: That's a remarkable shift...

11

12 Page: It doesn't sound bad to me.

13

14 Launius: No. That's a remarkable shift. I was about 7 or 8 before I realized they
15 weren't supposed to blow up. ~~blow up~~ *stet* 

16

17 {laughter}

18

19 Launius: I thought they were big fireworks but...

20

21 Page: Well you know way back in the early Atlas if it didn't blow up you went out
22 and partied all damn night. {laughter} Because they were more likely to blow up than
23 anything else. Because everything was new. 

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Dethloff: Excuse me. Was there a lot of change in the way you worked when you were with NASA as opposed to the way you had worked when you were with General Dynamics?

Page: No.

Dethloff: It was much the same style of work, same type management and so forth?

Page: Well yeah, but with NASA we sort of were overseeing what the contractor was doing. However, not so far back as you see now days in relationships between contractors and government agencies.

Dethloff: Right.

Page: We were right out there working side by side like a test conductor on a NASA vehicle was a NASA guy. Sitting next to him was a contractor guy who had the same title but he would direct his orders and comments mostly to the contractor engineers who were on station. The NASA guys would work, we had probably a duplication of the launch team between NASA and the contractor. It was a check and balance thing, which at times was a real pain in the ass but it turned out to, I think, add something to the program.

1 Dethloff: But basically it was a hands on experience...

2

3 Page: Yes.

4

5 Dethloff: ...in those earlier...

6

7 Page: Yes it was.

8

9 Dethloff: ...years.

10

11 Page: Yeah. You know there are people in every line of work that no matter
12 what kind of a contract or job description they've got, they're gonna get in there and get
13 their hands dirty and do the job. And there are others who aren't gonna do a damn
14 thing. There's not much you can do about it. So you work around or with them.

15

16 Launius: You just mentioned there were obviously some who worked very hard and
17 some who didn't work very hard at all. Would you say the level of dedication was really
18 pretty exceptional though?

19

20 Page: Definitely. Yeah, we had people that would be out there for 24, 36 hours.
21 It wasn't unusual.

22

1 Launius: Yeah. Well some of the demographics that we've seen for the Apollo
2 Program for instance are that routinely people were working 60 hours, 70 hours a week.
3 And it really played havoc with their personal lives as well as their personal health in
4 some cases.

5

6 Page: Tell me about it.

7

8 {laughter}

9

10 Launius: OK.

11

12 Page: Yes it did. Both ways. And because you were out here most of the time.
13 I know how it was. A lot of the people who worked for me...

14

15 Launius: Yeah, it's tough to balance.

16

17 Page: Yes.

18

19 Launius: But it's very significant. At what point did you become a part of the Apollo
20 Program? As Gemini wound down in '66?

21

22 Page: Yeah. I got in on some of the early Apollo operations, not manned ones
23 yet. They were launching out of Complex 34.

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Launius: Yeah. The 1B's were going out of there.

Page: Yeah. And I got involved, NASA operations took over the operational management of that and we brought in the same types of management techniques that we used on the Gemini.

Launius: OK.

Page: It wasn't that big a change. It was different hardware, but you still approached it the...

Launius: ...the same way.

Page: ...the same way. Yeah.

Launius: But there was obviously a learning curve that you had to go through with the new hardware.

Page: Oh yes.

1 Launius: What kind of pressure did you feel to make this perform? I mean this was
2 the big one. This was the mission that was gonna go to the moon, as Kennedy said by
3 the end of the decade.

4
5 Page: Well we started out... the way they built that up I thought was very good
6 because we started out with just you know small parts of it, a command module.

7
8 Launius: OK.

9
10 Page: And we'd launch that. And then by the time you got to a full up lunar
11 mission you'd been through a lot. So I think the way NASA worked that was really good
12 because they didn't have much time to waste. The fire set us back. And I was just
13 amazed that we were able to turn it around get done before the end of the decade.

14
15 Launius: Yeah. There were a lot of people that weren't sure. We need to talk
16 about the fire a little bit. There had been some obviously some unmanned tests of
17 various components of the, of the Apollo system, but the first human flight was going to
18 be the one with Gus Grissom and Roger Chaffee and Ed White. And the plugs out test
19 was kind of I think one of the last major reviews before it actually went to the operations.
20 Wasn't it?

21
22 Page: It was. It was, yeah.

23

1 Launius: Can you tell us a little bit about where you were and what you were doing
2 at the time of the fire?

3

4 Page: Well I was the Test Director on that. I was in the Firing Room on Launch
5 Complex 34, was it 34?

6

7 Launius: Yeah.

8

9 Page: Yeah. Those numbers all run together for you.

10

11 Launius: I understand.

12

13 Page: And I was the Launch Director in the blockhouse. And I had several of my
14 guys there. I had a guy who monitored the spacecraft. Another guy, of course we didn't
15 have the lunar module on that one. But anyways, there was a team of us there as
16 operations. And we sort of ran the total operation for NASA and the contractor because
17 we had I guess the most experience in it. It was a hell of a day.

18

19 Launius: Yeah, I'm sure.

20

21 Page: Yeah. I remember... it gets a little _____?_____ after a while. But I
22 remember when in the morning of the day of that test I was in here about 5 o'clock and
23 we never got to the T-zero until sometime in the afternoon or late afternoon. I forget the

1 time. And I just remember after it was all over I just sat there and shook because I
2 couldn't believe what had happened. It was a terrible thing. Cause you remember, you
3 know you knew all along it was a hazardous business.

4

5 Launius: Sure.

6

7 Page: But we thought, we're gonna lose somebody, we're gonna lose them in
8 outer space.

9

10 Launius: Right.

11

12 Page: Not sitting on the pad for Christ's sake a hundred yards away. It was
13 tough and a lot of people had trouble with that.

14

15 Launius: Oh, I think so. Everybody that I've talked to has said, has run through in X
16 their minds what could I have done different that might have prevented this.

17

18 Page: Well it's obvious what we could've done different.

19

20 Launius: Sure.

21

22 Page: We could've paid a hell of a lot more attention to safety. I mean we were
23 running that vehicle in a configuration that was just like a bomb sitting out there. And

1 we went about fat, dumb, and happy without any special precautions, I mean that was
2 stupid.

3

4 Launius: But you'd been doing this test for a long time.

5

6 Page: Yes. We had been doing it all through Mercury and all through Gemini
7 and never had a lick of problem with it. But on Apollo, we got a bigger spacecraft, more
8 room to store stuff in. People started putting stuff in that shouldn't have been in,
9 flammable material...

10

11 Launius: Um-huh.

12

13 Page: And when the spark hit, it just went and the 100% oxygen made it like a
14 bomb. And anybody looking back on it, you know you say, "Well shit what'd you think
15 was gonna happen, you dummy."

16

17 Launius: Well hind sight is 20/20 though, I mean.

18

19 Page: But that was a tough time. A tough time.

20

21 Dethloff: Was there a substantial change in testing procedures or anything following
22 that?

23

1 Page: Oh yeah. Yeah. We got a lot more conscious of safety and steps to take
2 in the safety world.

3

4 Launius: OK.

5

6 Page: The first test after the fire, I forget how long, it was quite some time. But I
7 remember sitting there just thinking, "Shit we're never gonna get another one off the
8 ground." It just you know there's too many reasons not to.

9

10 Launius: So you thought the whole Apollo Program might have been lost at that
11 point?

12

13 Page: I thought it was in serious trouble.

14

15 Launius: There was a lot of negative publicity obviously after the fact...

16

17 Page: Oh yeah. As well there should have been.

18

19 Launius: Yeah. And actually in the sense, there are political scientists that have
20 looked at the sense making process and what they describe as a set of steps that
21 people, societies, organizations go through, that enables you to deal with it and move
22 on. And one of the things that has to happen in this model that they talk about of sense
23 making, is that there has to be somebody fingered for the blame. And if that doesn't

1 happen then somehow the whole technology is questioned. A great example of that is
2 Three Mile Island where as a result of Three Mile Island nobody, no individual got
3 blamed. Consequently the whole technology is somehow viewed as risky and not worth
4 pursuing. In this particular case Joe Shea took a lot of blame...

5

6 Page: Yeah, he took the lumps.

7

8 Launius: Basically, he took the lumps. He lost his job. And I guess Stormy Storms
9 on the North American side did the same. They of course, up until the point that they
10 passed on, are absolutely convinced that they were not the culprits. And that's probably
11 true. It's much larger than that. But I guess my question relates to, how do you go
12 about restructuring a program so that you can make it safer in some specificity. Are
13 there sets of instructions that are written down that weren't written down before? Are
14 there more people put on the checking process, the verification process? What kinds of
15 things did you all do?

16

17 Page: All of the above.

18

19 Launius: OK.

20

21 Page: Yeah, we did all of those.

22

23 Launius: As well as redesigning the whole capsule.

1 

2 Page: Yes.

3

4 Launius: And then it flew with Apollo 7 in October of 1968. Which I started looking
5 at political cartoons and one of the things that I found that except for Apollo 11 the
6 mission that got the most kind of political cartoon commentary and it was very positive
7 was Apollo 7 because we had now recovered. Is that sense that you had here at KSC?

8

9 Page: I believe so. I think that successful mission went a long way to restoring
10 people's faith in the program.

11

12 Launius: Confidence, yeah. OK. Did you work any of the issues that we had to
13 deal with on Apollo, like the pogo problem?

14

15 Page: That was a little out of my league.

16

17 Launius: OK.

18

19 Page: I'm more the hands on operation guy. That's in the design world.

20

21 Launius: Right. Right.

22

23 Page: I was on the fringes of it, but I didn't contribute anything to it.

1 X

2 Launius: OK. All right. Fair enough. And how about all up testing? What do you
3 think about that decision to basically stack 'em all up and fire it.

4

5 Page: Oh, I thought that was gutsy.

6

7 {laughter}

8

9 Launius: It looked good cause it worked.

10

11 Page: Yeah. Now that took a lot of guts. That I give NASA management all
12 kinds of credit for because we'd been historically plodding around. We'd do one thing at
13 a time. Waiting, get the bugs out of what we just did and then try something else. But I
14 thought that all up thing was remarkable.

15

16 Launius: Did you also feel like that about Apollo 8 circum-lunar flight?

17

18 Page: Yeah. That one, that was an exciting...

19

20 {laughter}

21

22 Launius: The second time we put people on this thing we go to the moon.

23

1 Page: I know. You know I couldn't believe that we were going to do that. You
2 know we got to know the astronauts that we worked with pretty well. And you had real
3 mixed emotions about seeing someone get in that thing, strap themselves in. You
4 wonder are you going to see them again. Now that was a gutsy one too.

5

6 Launius: And it worked.

7

8 Page: Yes, it did.

9

10 Launius: And we probably wouldn't have landed the next year had it not worked.

11

12 Page: That's exactly right.

13

14 Launius: Well tell us a little bit about Apollo 11. That's the big one obviously.
15 That's the one we said we were gonna do. Where were you at...

16

17 Page: I was, let's see my title, I guess I was Spacecraft Test Conductor on it,
18 yeah, and I was responsible for all of the spacecraft hardware. And I was in the Firing
19 Room, not the Firing Room now, for Apollo we had rooms over in the Manned
20 Spacecraft Operations Building...

21

22 Launius: OK.

23

1 Page: ...where we monitored spacecraft systems. And I don't know whether you
2 ever saw the setup over there, but up on the, I think it's the 3rd floor we had back to
3 back control rooms. One which controlled the lunar module and all the people that were
4 involved in that were in this room on their own radio frequencies. And then the next
5 room had an equal amount of space and all the people that controlled the command
6 module sat over there and ran the count from there.

7

8 Launius: OK.

9

10 Page: And then my job was to sit in the middle between them and make sure
11 they talked to each other.

12

13 Launius: OK.

14

15 Page: ...and that worked pretty good then. I used to worry about it a lot, but it
16 went pretty good.

17

18 Launius: How did everybody feel when they, when Apollo 11 went off and actually
19 landed and so forth. I assume there was a sense of relief and pride and joy. . .

20

21 Page: Oh yeah. Yes absolutely. I overused back in those days the... I'd learned
22 a new word, euphoric.

23

1 Launius: OK.

2

3 Page: I overused it a lot. But yeah there was great feelings there. And then
4 when the guys got back and all the parades and everything for them I think people really
5 reacted to that.

6

7 Launius: How did the local, I mean, I have the sense that the people who worked
8 here at KSC during the Apollo era were viewed as heroes in the local area. I mean this
9 was a very popular thing and you guys were doing really cutting edge important stuff. Is
10 that a perception that's correct? Was there a lot of popularity for you individually as well
11 as all the folks doing KSC activities? Or did most people ignore it?

12

13 Page: I don't think it was, I mean I never got attacked...

14

15 Launius: OK. Well I wouldn't expect so.

16

17 {laughter}

18

19 Page: But there was a lot of respect for people I think.

20

21 Dethloff: How about the changes in the community during that period. That's the
22 period of tremendous growth in personnel and housing, everything is happening. Could

1 you comment on that? In the '60's, the changes that are going on here at KSC in terms
2 of just size and activities.

3

4 Page: Well you knew that things were mushrooming around you and the town
5 was spreading out but it never, never got to me very much.

6

7 Dethloff: OK. You were focused on other things, right?

8

9 Page: Yeah, there was enough other stuff to worry about.

10

11 Launius: We obviously land on the moon 6 times with the Apollo Program. One,
12 Apollo 13 that didn't land, but we brought them back alive and that was a good thing.
13 But in December of 1972 the last Apollo mission flew. Those of you working on the
14 program, what was taking place at that point? Apollo's finished or finishing. What was
15 going to happen? I know KSC underwent a reduction in terms of personnel but other
16 people went on to other projects. What was taking place here?

17

18 Page: Well I believe we shifted from Apollo to the, what the hell was that next
19 program, the...

20

21 Dethloff: Russian, Apollo-Soyuz or...

22

23 Page: ...Yeah, Apollo-Soyuz.

1

2 Launius: The ASTP Project and Skylab too.

3

4 Page: Yeah. And we rolled into those. And most of our people went right over
5 there. I'm talking about the spacecraft side of the house.

6

7 Launius: Sure.

8

9 Page: Now some of the flight hardware people were phased out because they
10 weren't going to use their hardware anymore. So there was a lot of that going on.
11 People jockeying for position and all that.

12

13 Dethloff: Was there a sense of let down or a sense that maybe this is all over
14 after...

15

16 Page: Oh I think a certain amount. I think so. I mean let's face it, what could you
17 do...

18

19 Dethloff: What's next.

20

21 Page: ...after you've been there. Yeah.

22

23 Launius: Yeah. What do you do for an encore?

1 ✕

2 Dethloff: And when did you first begin to get involved in Shuttle activities...

3

4 Page: Oh boy. I wish I could remember exactly how I got led into that because I
5 was already tired. What are you saying Lois?

6

7 Background voice: ELV first.

8

9 Page: Oh yeah, that's right. I had a slight detour.

10

11 Dethloff: OK.

12

13 Page: I was responsible for the expendable launch vehicles too. And I spent
14 some time between here and Vandenberg launching expendables. Now that was
15 refreshing because you weren't worried about some guy getting hurt.

16

17 Dethloff: OK.

18

19 Page: So I did, I don't know how many of those I was responsible for. And then
20 Dick Smith and I, I'm trying to get it straight in my mind when I, oh yeah Kappy was in
21 charge.

22

23 Launius: And who is Kappy?

1 

2 Page: Kappy used to be the Launch Director.

3

4 Launius: OK.

5

6 Page: Walter Kapryan.

7

8 Launius: All right.

9

10 Page: And then he sort of, I don't know, did he quit?

11

12 Page: Oh yeah, O'Malley. Now there's where contractor and a NASA guy didn't
13 hit it off and both of them were powerful people. O'Malley was the guy in charge of the
14 contractor, which was North American and Kapryan was the NASA overall Launch
15 Director. And the two of them got into a, well they didn't actually get to fighting but they
16 might as well have. But it was obvious they had to make a change and O'Malley had
17 more people behind him. So Kappy left and they asked me to be Launch Director and I
18 said I don't think I want to do that but if that's what you want me to do I'll give it a try.

19

20 Dethloff: You don't remember when that was by chance, do you, what year
21 roughly?

22

23 Page: Well when was the first Shuttle?

1 

2 Launius: '81.

3

4 Dethloff: '81.

5

6 Page: So that would be '80.

7

8 Background voice: It'd be '79 or '80.

9

10 Dethloff: '79 or '80, OK.

11

12 Page: '79 or '80. Yeah.

13

14 Dethloff: So you're... oh OK.

15

16 Launius: I think she's fine.

17

18 Page: We running out of time?

19

20 Background voice: No. No.

21

22 Launius: No, we're doing all right.

23

1 Dethloff: So you're edging into Shuttle though about '79 or '80...

2

3 Page: Yes.

4

5 Dethloff: ...for sure.

6

7 Page: Yeah.

8

9 Dethloff: OK.

10

11 Launius: And what kind of, what responsibilities did you have? You were doing
12 tests obviously.

13

14 Page: Yeah, well I was in charge of the whole thing. I had all of the Shuttle
15 NASA engineers, operations people, and everybody worked for me. I was in over my
16 head.

17

18 Launius: Oh yeah?

19

20 {laughter}

21

22 Launius: You'll admit that now.

23

1 Page: Yeah. That was a tough job.

2

3 Launius: Well the bulk of, obviously the bulk of the Center is dedicated to bringing
4 Shuttle online at this point.

5

6 Page: Yes. Right.

7

8 Launius: Roughly, if you can recall, I mean how many people are we talking about
9 that you had oversight over at this time and what were they kind of, what were they
10 doing?

11

12 Page: I uh...

13

14 Launius: You don't recall. OK.

15

16 Page: You know we had, we had engineers, operations people, support people,
17 the whole nine yards. And there were thousands of them.

18

19 Launius: Well in 1981 you launched STS-1...

20

21 Page: Right.

22

23 Launius: Crippen and...

1 

2 Page: John Young.

3

4 Launius: ...and John Young, yeah are the guys aboard. It's the first flight of the
5 Shuttle into space. It's also unprecedented for NASA that it launches a human space
6 flight spacecraft for the first time with a person aboard.

7

8 Page: Right.

9

10 Launius: We'd always done tests before. How did you all prepare to do this?

11

12 Page: Not much differently from before. You know we had a set of tests that
13 ahead of time we said we want to run this and then this and then in sequence.

14

15 Launius: OK.

16

17 Page: And there were certain things that were required and absolutely
18 prerequisites to the next step.

19

20 Launius: OK.

21

22 Page: And we went about it that way.

23

1 Launius: Did you have some questions on safety issues? I thought you did.

2

3 Lee Snaples: In the first Shuttle in 1981 you have another pad accident where
4 you have a pair of Rockwell International employees who end up in the Shuttle while
5 they're conducting a test and they suffocate. Do you recall that accident?

6

7 Page: Vaguely.

8

9 Snaples: OK.

10

11 Page: Trigger me a little bit now.

12

13 Snaples: It's a major test. You have crew in the Shuttle itself and they're doing a
14 gaseous nitrogen purge in the aft compartment.

15

16 Page: OK. Yeah.

17

18 Snaples: Do you recall any of the details of that accident?

19

20 Page: Not much. As I recall, and this sounds like a cop-out, I wasn't on station
21 that day.

22

23 Snaples: OK.

1 X

2 Page: And so what I remember is very spotty.

3

4 Snaples: Had NASA, had you perhaps gone back to the idea that you were safe on
5 the ground?

6

7 Page: No, I don't think so.

8

9 Snaples: You don't think so. Was...

10

11 Page: I think it was just an oversight.

12

13 Snaples: An oversight. Were you under a lot of schedule pressure?

14

15 Page: That was the name of the game.

16

17 Snaples: OK. Well because I've read through the accident report and in the
18 accident report Rockwell International is basically begging the Test Director to let them
19 back in as soon as possible. And so it sounds very much like they're trying to get every
20 single moment they can in the Shuttle and that that probably contributed to...

21

22 Page: Yeah, I vaguely recall that.

23

1 Snaples: ...the accident.

2

3 Page: They wanted to get in there and get started on some work.

4

5 Snaples: And that they're... that because of that pressure they didn't pay as much
6 attention to what was, to what was going on.

7

8 Page: Yeah.

9

10 Snaples: OK. That's all the questions I have.

11

12 Page: Isn't it funny how you forget? I'd forgotten all about that incident.

13

14 Snaples: Yeah. Well the reason I ask is because in the official report, the report
15 criticized KSC because it hadn't learned as much as it should've from the Apollo fire
16 saying in effect that some of the same mistakes had been repeated. And I wanted to
17 see since you had been there through both if you thought that was true?

18

19 Page: Yeah. Well I never, I guess I just wasn't close enough to that second one.

20

21 Snaples: OK.

22

23 Page: There is no question who screwed up, we did.

1

2 Snaples: All right. That's all my questions.

3

4 Launius: OK. All right.

5

6 Dethloff: What sticks in your mind most strongly let's say about the Shuttle
7 development and launch procedures that you were involved in? Was there any special
8 moment or event or personalities that really stick with you more so than anything else on
9 the Shuttle?

10

11 Page: What impressed me more than anything else was the launch of the first
12 one.

13

14 Dethloff: OK.

15

16 Page: I never thought all of that hardware would...

17

18 Dethloff: Would ever get off...

19

20 Page: ...hold together that long.

21

22 {laughter}

23

1 Page: But we used to have nightmares about, you know we never worked with
2 big solids like that before and we'd sit there and what if... what if one solid lights and the
3 other doesn't? You can see this thing sort of pinwheeling down the, down the ramp.
4 And so we had a lot of what ifs. But I tell you I never felt so relieved personally
5 associated with a launch as I did when STS-1 got successfully into orbit.

6
7 Snaples: Did you have as much pride with that as you had had with Apollo 7 or
8 Apollo 11?

9
10 Page: Did I have as much what?

11
12 Snaples: Pride. As much...

13
14 Page: Oh yeah because I had more responsibility on that one.

15
16 Launius: I think the public perception was also one of great pride as well. We'd
17 returned to space...

18
19 Page: Yeah.

20
21 Launius: ...after being absent for 6 years and I can recall watching the landing for
22 instance that took place out at Dryden with Walter Cronkite who was still in the anchor
23 chair at CBS at that time who as it lands and it successfully comes in and comes to a

1 halt and he mops his brow and he says, "Woooo, I wasn't sure that this was gonna..."

2 The Shuttle tiles was a great discussion, an entirely new approach to dealing with re-
3 entry. Did a lot of those kinds of issues... were you thinking about all of that stuff too?

4

5 Page: Oh yeah sort of in the back of the head. Course that was pretty much out
6 of my pay...

7

8 Launius: Right.

9

10 Page: ...group.

11

12 Dethloff: And how about the Center Directors you worked with. Were there any
13 outstanding memories or experiences you had with directors over time from Debus
14 through Scherer, Honeycutt, whomever, you know, any special...

15

16 Page: Well Debus is the most outstanding one to me. He, I thought, did a great
17 job.

18

19 Dethloff: Yeah.

20

21 Page: I mean he was, I don't know, he just gave the impression he knew what
22 the hell he was doing. All of them did a good job.

23

1 Dethloff: Yeah. OK.

2

3 Page: He sort of stood out in my mind.

4

5 Dethloff: Were there, was there much change in the way things were done after

6 Debus left?

7

8 Page: No.

9

10 Dethloff: No. OK.

11

12 Page: Not much.

13

14 Dethloff: Continued on pretty much in the same mechanism.

15

16 Page: Yeah.

17

18 Launius: What can you tell us about the relations with other Centers and with

19 Headquarters?

20

21 Page: Well you know it takes a team to do this thing. We couldn't have done it

22 by ourselves, they couldn't have done it by themselves. And I got pretty close to a lot of

23 the guys at JSC and I spent some time down there and I was impressed by the flight

1 control group down there. Gene Kranz, Glynn Lunney, I thought were great. And we
2 worked very closely together on the early ones you know setting up the launch counts
3 and talking about the time required for this, the time required for that. And it was
4 pleasure to work with them. And they were all so professional. So I never, oh every
5 now and then you'd, you know they'd want something done that you'd think ahh that's
6 kind of show offish, but what the hell. They did a good job. And the other Centers, they
7 all had their areas of expertise and they did a good job at it.

8

9 Launius: How about the Headquarters? There's lots of people at various Centers
10 who essentially think that the Headquarters is superfluous and...

11

12 Page: yeah well...

13

14 Launius: ...should just give them money and that's the end of them.

15

16 Page: ...that's the natural you're gonna get. But you need a certain... you need
17 to have some central management control over the whole bloody thing. And that was
18 their role.

19

20 Launius: Right.

21

22 Page: They stuck to it pretty well.

23

1 Launius: OK. All right.

2

3 Page: They at times you know they'd get off on a tangent or we'd have a
4 problem and so they'd send somebody down here to watch over our shoulder closer.
5 And that would pass in time.

6

7 Launius: OK. All right. At the time that Shuttle first flew Jim Beggs was the NASA
8 Administrator. Did you have interface with him on this?

9

10 Page: Yeah.

11

12 Launius: How was he to deal with?

13

14 Page: Good. I liked Jim. I tell you why if you promise not to write it.

15

16 {laughter}

17

18 Dethloff: Uh-oh. OK.

19

20 Launius: OK.

21

22 Page: Well I've been known to after a particularly rough count or something, I'd
23 been known to open my bottom desk drawer and get out a little bottle of spirits...

1 X

2 Launius: OK.

3

4 Page: ...and have a wee shot. And he was there for the first couple of launches
5 he was here. He was first in line before me.

6

7 {laughter}

8

9 Page: So he was all right with me.

10

11 Launius: All right. OK.

12

13 Dethloff: OK.

14

15 Page: Yeah, I liked Jim.

16

17 Launius: There's been a constant movement back and forth over, over how best to
18 manage large scale technological aerospace projects. They run all the way from a
19 centralized management approach like in Apollo with Sam Phillips as the overall project
20 manager to lead center concepts which was how Shuttle was managed in terms of its
21 development to some combination thereof. And I was wondering if I could get you to
22 comment a little bit on any of those that particularly struck you and whether or not one
23 works better than another and maybe why if you have any thoughts on that.

1 

2 Page: I really don't. We lived through all of the variations they had on them and
3 that's a tough thing to overall manage something that complex. I've always felt you
4 have to put it into the size of bites that a guy can take. So you don't overload one
5 person too much, or one group, or one Center. And I been subjected to all of the
6 methods you talk about and I don't have a hard core feeling for any one of them.

7

8 Launius: OK. All right. I think we need to wrap up this one. Let's take a little break.
9 I've got a few other questions and you guys probably do as well. And so why don't we
10 you know take 5 minutes or so and relax and then we'll do the rest of it.

11

12 --SHORT BREAK--

13

14 Launius: Well we've got some photographs here and what I'd like to do is just kind
15 of go through them with you and we'll reflect on them a little bit and talk about the
16 various aspects of it. The first is the Mission Control Center for Mercury 8 Mission.
17 Were you a part of this particular mission at all?

18

19 Page: From the standpoint of the booster, I was still with General Dynamics.

20

21 Launius: OK.

22

1 Page: We had the launch vehicle for that one. That's interesting, you can see
2 from this what the business has grown to.

3

4 Launius: Right.

5

6 Page: This was the complete group that it took to monitor that launch, or that
7 flight, and nowadays you couldn't get the people that do that in 15 of those rooms.

8

9 Launius: Yeah, there's only about 10 or 12 people in this photograph here. It's a lot
10 more complex now.

11

12 Page: Yes it is.

13

14 Launius: And this is a launch of an Atlas. And you worked on the Atlas Program...

15

16 Page: Yes I did.

17

18 Launius: ...at first.

19

20 Page: Which one is that?

21

22 Launius: That's Wally Schirra's launch, it's MA8.

23

1 Page: MA8.

2

3 Launius: Yeah. Did you deal with the issue of... I mean Atlas was developed
4 initially as a ballistic missile...

5

6 Page: Yes.

7

8 Launius: ...and there were lots of people very concerned about whether, and
9 including Wernher von Braun who didn't think that this should be used for people. Did
10 you work on the project in terms of trying to bring it over to the NASA side of the house
11 and to be able to put the Mercury capsule on it at all?

12

13 Page: Well the transition from unmanned launch vehicle to a manned I worked
14 on. But that was already pretty well planned and you know I got there at the hardware
15 stage.

16

17 Launius: OK. All right.

18

19 Page: But there was a certain amount of changes to the vehicle there's no
20 question. It was a good old vehicle though.

21

22 Launius: Well actually it was. And of course we're still flying them.

23

1 Page: Yeah.

2

3 Launius: With a Russian engine on it. Can you believe that?

4

5 Page: No, I can't believe that.

6

7 {laughter}

8

9 Dethloff: What a world.

10

11 Launius: Recycled a Russian motor. Unbelievable. John Young and Gus Grissom
12 in the Gemini Program, you worked with these guys I'm pretty sure.

13

14 Page: Yeah. I was... John was... I was closer to him than any other astronaut
15 because I was Launch Director on 4 or 5 of his missions. He's a good old guy.

16

17 Launius: Um-huh. And a Titan launch. Again a carry over of the Titan launcher to
18 put it into the Gemini Program and you worked on that pretty thoroughly. Anything
19 special about launching the Gemini as opposed to the Mercury that you can think of?

20

21 Page: Do you mean on the...

22

23 Launius: Well just in general.

1 

2 Page: Oh, OK. Cause I don't think we... that's a dummy spacecraft...

3

4 Launius: OK. It may well be.

5

6 Page: Yeah.

7

8 Launius: Maybe a test.

9

10 Page: We never put a live spacecraft up there. But no it wasn't that much
11 different. I mean each one of those, each launch vehicle has got its on peculiarities.
12 The big thing on this one was the hypergolic propellants. They took a lot of special
13 handling and care.

14

15 Launius: OK. Of course the Saturn V, the biggest launch vehicle ever built, very
16 impressive thing.

17

18 Page: A lot of hardware there.

19

20 Launius: A lot of hardware. Apollo 17 crew, that was the last mission to the moon.
21 How did you all feel about that when it...

22

23 Page: Sad.

1 ✕

2 Launius: It was kind of sad.

3

4 Page: Yeah. Well at the time we didn't see what would be coming afterwards.
5 The Shuttle was still way down stream.

6

7 Launius: Yeah. Gene Cernan had one of the best lines I've heard a couple of years
8 ago when I talked to him. He says, "You know we used to talk about these Apollo
9 missions in science classes and now we talk about them in history classes." And that's
10 a sad thing.

11

12 Page: Yeah. It's true.

13

14 Launius: I mean it is historic. But I thought it was a pretty good line. Another
15 picture of Gemini, or of Apollo from above. I don't know that there's anything much to
16 say about that. Tell me a little bit about this group here. You're sitting right here in the
17 middle of this. This is a STS launch early in the early days...

18

19 Page: Oh OK. Well I gotta be truthful with you.

20

21 Launius: All right.

22

1 Page: OK. Back in the STS-1 days we had so cotton picking many visitors
2 wandering around {laughter} that the blockhouse I call it, that I knew when it got down
3 to launch day that I was gonna have trouble unless I took some steps. So I had these
4 two chairs empty and I decided I was gonna fill them with people from my organization
5 even if they didn't have a damn thing to do which they didn't. So I put Bob Reid who he
6 died within a couple of years of this and Grady Corn up there. Grady was sort of a
7 launch vehicle specialist. Bob was a spacecraft specialist. This is Dick Smith the
8 Center Director...

9

10 Launius: Right.

11

12 Page: ... at that time. And what the hell is his name?

13

14 Launius: It's on the back here. Let me find it.

15

16 Page: Your friend...

17

18 Launius: Tom Utsman.

19

20 Page: ...Utsman.

21

22 Launius: Yeah. Jim Beggs was down for this launch...

23

1 Page: Yeah.

2

3 Launius: ...but he didn't set up in this room here.

4

5 Page: No. He didn't set in this room. He sat, we have a separate room back
6 over here and that's where the VIP's sat.

7

8 Launius: OK. All right. So did he have a hotline to you to...

9

10 Page: No. No. He stayed out of it.

11

12 Launius: Oh, that's interesting.

13

14 Page: Yeah. We never had any direct interface with the NASA administrator
15 during an operation. They stayed the hell out of it.

16

17 Launius: And that was always the case?

18

19 Page: Yeah.

20

21 Dethloff: That's good.

22

23 Launius: That's very interesting.

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Page: We'd talk to them afterwards, before. But they very seldom got in any decision making or anything like that.

Launius: That's interesting.

Launius: OK. Well that's a good story. Go on, tell me a little bit about, I mean this is STS-2. There's Dick Truly...

Page: Yeah.

Launius: ...yourself on one side. I assume that's probably the rocket that they're going off in the background there. Dick, of course, was probably more responsible than anybody in the Agency at the time of the recovery from Challenger, resetting lots of policies after the fact as the Director of Space Flight and then of course became the NASA Administrator in 1989. Any thoughts or comments?

Page: No. I thought Dick did a good job. He was a departure from the guys who had been doing it, the Petrones, that and everything, but I thought he still did a damn good job. He was a pleasure to work with.

Launius: Yeah. And launch of STS-2. All the tanks now, all of the liquid tanks are a different color. Is there any particular reason?

1 X

2 Page: Yeah. It's about how many tons later...

3

4 Launius: OK.

5

6 Page: It's the paint. Yeah, we painted the first few and finally decided why put so
7 many tons of extra weight on the damn thing. You don't need it.

8

9 Launius: Not to mention the cost of painting it.

10

11 Page: Yeah. So that was easy.

12

13 Launius: Yeah. {laughter} Any questions?

14

15 Dethloff: Well one quick question. Just very broadly, do you think NASA during
16 your experience gave enough attention to expendable launch programs and efforts,
17 or... since you've done been on both sides.

18

19 Page: When I was there they did.

20

21 Dethloff: They did. OK.

22

23 Page: {laughter} I'm being facetious.

1 X

2 Dethloff: Oh, OK. No I...

3

4 Page: No. I thought they did. I thought they handled it...

5

6 Dethloff: It was a pretty good balance and that the human program didn't
7 overwhelm everything else.

8

9 Page: Oh, no.

10

11 Dethloff: OK.

12

13 Page: No. We were able to coexist.

14

15 Dethloff: OK. Good. Thank you.

16

17 Page: Worked well.

18

19 Launius: Do you have any...

20

21 Snaples: Did you see any change in the astronauts from the Apollo to the Shuttle?

22

1 Page: Not that I could single out. I mean certainly the early guys were more
2 gung-ho and all that stuff. I guess when you get to where you don't know them
3 personally anymore, I mean we used to play softball with them and you know go out
4 drinking with them and everything. And of course we haven't done that for years and
5 years and years.

6
7 Snaples: Is that a simple component of how many missions get flown and the fact
8 that these guys are making 2 and 3 and 4 rather than...

9
10 Page: Yeah. That's part of it. They're busy when they're not here. When they're
11 not, you know on a mission or training for a mission. But we used to have a lot of fun
12 with those guys.

13
14 Snaples: Before you left did you have much of a relationship with the British or the
15 French or some of the others that were coming in as international partners in the United
16 States.

17
18 Page: Very little. We just were starting to scratch the surface of the international
19 stuff.

20
21 Snaples: Back to Apollo-Soyuz for a minute. Was it, was it strange to be dealing
22 first hand with the Russians when you had been sort of racing them to the moon
23 beforehand?

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X

Page: Apollo-Soyuz.

Launius: Yeah. The docking in space, 1975.

Page: Yeah, I know. But we really had very minimal interface with them. It wasn't much at all.

Snaples: All right. That's all I've got. Anything we've forgot to ask you that you'd like to tell us?

Page: I can't think of anything. I'm sorry my memory doesn't serve me better.

Launius: No, that's quite all right.

Dethloff: You've done very well.

Launius: You've done well. One final question I guess I would ask is, if you were gonna give advice to a young aerospace engineer about flying rockets and doing your job well, what would you try to tell them? Anything in particular?

Page: Well, it's funny you should ask. I'm from a great family of space pioneers.

1 Launius: OK.

2

3 Page: My son worked Shuttle. He's now out in California working for the
4 company that turns the Orbiters around.

5

6 Launius: Um-huh. OK.

7

8 Page: Reconfigures them. And my grandson is Ground Launch Sequencer
9 Engineer out here in the Firing Room.

10

11 Launius: All right. So you passed the legacy on.

12

13 Page: Yeah. And I'm proud of both of them. In fact I'm supposed to, my son is
14 trying to work, grandson is trying to work a deal to get his father and I to be in the Firing
15 Room...

16

17 Launius: Altogether.

18

19 Page: ...when he. Yeah. Not right with him because he's at the console.

20

21 Launius: OK.

22

1 Page: He will be in charge of the GLS on not the next one, but the one after it.

2 And he's trying to work a deal for us to be out there to see it.

3

4 Launius: That's terrific.

5

6 Dethloff: Great. Yeah.

7

8 Page: Which will be tremendous.

9

10 Launius: That's terrific.

11

12 Page: So I would say to kids who are interested in engineering, space, and that,
13 you know, they could go anyplace. They could go to Houston, any of the other Centers,
14 or come here. Get a job. Find out what you like.

15

16 Launius: OK. Any final comments, questions. Thank you so much.

17

18 Dethloff: Appreciate it, thank you sir.

19

20 Page: You're very welcome.

21

22 Launius: We appreciate it so much.

23

1 Page: And I apologize for my lapse of memory.

2

3 Launius: No. No. No. Don't worry.

4

5 Dethloff: You did great.

6

7 Snaples: You did wonderful. Thank you sir.

8

9 Page: Thank you.