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Mr. Ike Rigell's

3

Oral History

4

Kennedy Space Center

5

Held on June 18, 2001

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Interviewer: Dr. Henry Dethloff,

8

Dr. Lee Snaples

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Transcriptionist: Sharon Youngquist

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1 Henry Dethloff: Today is Monday, June 18, 2001. We're at Kennedy Space Center
2 with Lee Snaples. I'm Henry Dethloff and our guest today for this oral history is Ike
3 Rigell. Ike could you please tell us your full name and a little bit about your background,
4 your date of birth if you don't mind, and all of that.

5

6 Ike Rigell: Well that goes back pretty far. OK. My full name is Isom Rigell.
7 Isom is an old family name.

8

9 Henry Dethloff: It's Isom A?

10

11 Ike Rigell: Isom A., Alto, and I've always gone by Ike and that's the only name
12 that people out here would know me by. I was born in south Alabama on January 10,
13 1923 and do you want me to go . . .

14

15 Henry Dethloff: Yeah, pick up from there, if you would sir. On a farm?

16

17 Ike Rigell: No. In a little town, a rural town called Slocomb right near the
18 Florida border. And I spent my first 18 years there. And then in 1941 I joined the
19 Marine Corp. and I spent over 3 years, the next 4 years, and of course during World
20 War II in the Marine Corp.; three years of that over seas.

21

22 Henry Dethloff: Which way?

23

1 Lee Snaples: Where were you?
2
3 Ike Rigell: Pacific.
4
5 Lee Snaples: That's the _____(only) way the marines would go.
6
7 Ike Rigell: Saipan, _____, and Iwo Jima, and the Marshall Islands and
8 Midway Island.
9
10 Lee Snaples: You didn't ever happen to run into Harland Block, did you?
11
12 Ike Rigell: No. I know, in fact I saw there was this thing on Iwo Jima last night
13 on A&E and Harland Block, I'd read, he was in the 5th Division and I was the 4th Division
14 and he was one of the guys that raised the flag . . .
15
16 Lee Snaples: One of my cousins.
17
18 Ike Rigell: Is that right?
19
20 Henry Dethloff: Is that right? I hadn't heard that.
21
22 Ike Rigell: Well that is very, I mean this is kind of aside here, but it was very
23 interesting that, as you know in that picture of the flag raising, that his rear was toward

1 the camera. And you couldn't identify the face and he was identified as another guy.
2 And his mother maintained that, you know the story I guess better than I, but she
3 maintained that was her son. And later this Pima Indian you know that was an
4 _____(IRA's) they was in that group raising the flag. He paid a visit to her and told
5 her, "Yes, that was Harland."

6
7 Lee Snaples: Yeah. He hitch-hiked all the way down to the valley. It was . . .

8
9 Ike Rigell: That's one of the saddest stories I think I ever, I don't know if you
10 know it, but he was a Pima Indian that was one of the flag raising and he couldn't
11 handle all of the publicity you know. He had a problem with alcohol and finally . . .

12
13 Lee Snaples: And everywhere they took him they offered him a drink.

14
15 Ike Rigell: Yeah. That was, they just poured it on you.

16
17 Henry Dethloff: You leave the Marines.

18
19 Ike Rigell: OK. And so I went to school, of course under the GI Bill, at Georgia
20 Tech. And I graduated from Georgia Tech. in 1950.

21
22 Henry Dethloff: With a major?

23

1 Ike Rigell: Electrical Engineering. And I went to work immediately with the
2 TVA. They were recruiting young engineers for a training program where they position
3 their guys throughout the system to learn the whole system. I was stationed the first
4 assignment was up in Dayton, Tennessee near one of their steaming hydro-plants. And
5 while I was there, after a few months we read something about they were recruiting
6 engineers for the rocket program in Huntsville, Alabama. This was under Von Braun at
7 Redstone Arsenal. And so several of us guys in the training program there made a trip
8 down to Huntsville one day and we were sort of impressed with the rocket. At that time,
9 there were no experienced rocket people, except the Germans. I mean we didn't have
10 any. So an opportunity to get in on the very ground floor. So we were hired on the
11 spot. We went back and closed out our business in Tennessee and moved to
12 Huntsville, Alabama. That was in 1951.

13

14 Henry Dethloff: Who did the hiring? Do you remember?

15

16 Ike Rigell: Um.

17

18 Henry Dethloff: Just out of curiosity. That's OK.

19

20 Ike Rigell: I'll tell you the, I forgot her first name, but Ludy Richards, I don't
21 know if you ever. . . He was one that turned out to be one of the top guys later to
22 Marshall. It was his wife that was in Personnel and a guy named Rufus Porter was, I
23 think, head of the Personnel at that time. And so they were forming what they called a

1 Missile Firing Lab. You know, or maybe you know, that at that time the rocket program
2 was under, called ABMA, the Army Ballistic Missile Agency, it was military. And it was
3 you know they had taken over the old facilities at Redstone Arsenal, which in World War
4 II I believe was an ammunition facility. And so we moved there and then we were
5 interviewed for several positions, opportunities within the Army of Ballistic Missile
6 Agency. And one of them was they called the Missile Firing Lab. They were just
7 beginning to form that. And that sounded interesting to me because you'd move after
8 the Redstone Rocket was developed and tested up in Huntsville you know static tested
9 and ground tested we would bring it down to Florida to then Cape Canaveral, Kennedy
10 Space Center.

11

12 Henry Dethloff: Did you come with one of those firing teams?

13

14 Ike Rigell: I came with the first one, yes.

15

16 Henry Dethloff: In Nineteen-fifty. . .

17

18 Ike Rigell: In 1953.

19

20 Henry Dethloff: . . . 53. OK.

21

22 Ike Rigell: We launched the first Redstone Rocket. . .

23

1 Henry Dethloff: Were Debus and Greene along on that? Or do you remember?

2

3 Ike Rigell: Yeah. Dr. Debus was the head of the team. And we were still at
4 that time, we were under Dr. Von Braun was the head of the, of course there's a military
5 guy over him. But the Missile Firing Lab was a part of the Marshall, well it wasn't a part
6 of Marshall, part of the Army Ballistic Missile Agency and was not a separate entity as it
7 later became. Dr. Debus was the head of the Missile Firing Team and his deputy was
8 Dr. Hans Gruener, which was my immediate boss.

9

10 Henry Dethloff: OK.

11

12 Ike Rigell: So Dr. Gruener is the one that hired me technically. I mean in the
13 Personnel of course handled that. The other, the Missile Firing Lab was organized then
14 under, Dr. Gruener was the deputy next in line to Dr. Debus, and he was also head of
15 the electrical and guidance and control system.

16

17 Henry Dethloff: Let me ask you, the story I get from one of Debus' recollections or
18 something is that he went back probably after that first firing, the Redstone is just
19 getting underway, went back and talked to Von Bruan and said, "Look we need a
20 permanent position down there." And Von Braun replied, "OK. You do that." And then
21 that was . . .

22

1 Ike Rigell: Well, yeah. It evolved on that and the best I recollect Von Braun
2 Chief lieutenants up there, Marozik, Hauziman, and the guys up there didn't want that.
3 They did not want a separate, because they had more control they figure if it was still a
4 part of their group. So the makeup of the team at that time was say Dr. Gruener of
5 Guidance and Control Electrical, and Albert Zeiller was the Mechanical and Propulsion.
6 These are Germans. You know Albert was the old guy that used to watch the, give the,
7 well he'd give the OK to launch. If you want to put it in a negative way that he was at
8 the window if you're familiar with the blockhouses. Well from the old V2 you watch the
9 flame pattern, now this was the early primitive days. And you watch the pattern and
10 Albert was the guy that was familiar if it wasn't right he had a little cutoff button in his
11 hand that was you know with the wires that go back to the network and he could cut the
12 engine off. So he was head of all the Mechanical and Propulsion. And then Carl
13 Sindler, which Carl passed away a few days ago, he was head of the Telemetry and the
14 Electronic Instrumentation, and the tracking. In fact, Carl's group did a lot of the really
15 pioneer and development work on the tracking systems. They _____(dove) out in the
16 Doppler, all those systems that, because at that time you know things were pretty
17 primitive. You didn't have all that capability. And so we would, what our group did, they
18 assigned us to the rocket that was coming down. So we followed it through the static
19 test stand up in Huntsville, you know had a place to tie it down, light the engines, and
20 make sure it works. And then they brought it back through a facility called the Quality
21 Control Quality Lab and they would check it out, verify it. And then they would ship it
22 down to the Cape here, over you know where the. . . We first launched it from, I don't
23 know if it's still stands, an old blockhouse over on the point that was a very small little

1 room, was about this size. But there were two of them; they were a mirror image. And
2 we would launch the Redstone there. And then the _____ (Bomark), which was an
3 early Air Force rocket would use the other side. And so when we would launch the
4 rocket, we as a team would fold our tents, go back to Huntsville. Take all the control
5 panels out, go back to Huntsville and then follow the next one through. And we did that
6 for several rockets through 1953 and 1954. And then in 1955 a permanent, part of the
7 group moved down on a permanent basis. Dr. Gruener and myself and I don't know
8 there was 50 or 60. And so we found our place here on, mostly of Cocoa Beach, which
9 was not like it is today. Two or three "Mom and Pop" hotels and a surf club was there in
10 a very small way.

11

12 Henry Dethloff: You don't remember what month that was, by chance?

13

14 Ike Rigell: That we moved down?

15

16 Henry Dethloff: Yeah.

17

18 Ike Rigell: No I don't. We moved, Dr. Debus and Dr. Gruener and myself and
19 another guy that was in the electrical, R.P. Dodd, I don't know if you've talked to Dodd.

20

21 Henry Dethloff: No.

22

23 Lee Snaples: Not yet.

1

2 Ike Rigell: We moved, we were civilians but they permitted us, housing was a
3 problem here in that area, so they permitted us to move into the Patrick Air Force Base
4 Officer's Quarters, which on the northern end, as you enter from the north it was called
5 Wary Housing. They've demolished those now and they've built some more facilities.
6 But we lived in the Wary Housing on the base there, right across from the ocean and
7 that was a big deal for us. And so I lived there for a couple of years. Dr. Debus lived
8 there, oh golly, I don't know how long, and Dr. Gruener. And later I moved to Titusville.
9 But then we still made many trips back to Huntsville because a new rocket, as they
10 would get one ready to launch, we'd go up there for the final checkout and bring it down
11 and set it up and then launch. And we had our share of failures in those early days.

12

13 Henry Dethloff: Now most of that early stuff was Redstone that . . .

14

15 Ike Rigell: It was. It was all Redstone.

16

17 Henry Dethloff: Yeah.

18

19 Ike Rigell: The first rocket that we launched, it went out of sight, and of course
20 there was clouds, that's not saying. But the analysis from the telemetry records, the
21 vanes, the old Redstone had, it didn't have a swivel engine so you control it by it had
22 carbon flame deflectors in the exhaust stream and then had aerodynamic controls on

1 the fins. And they found out the cause of this, I don't know how much detail you're
2 looking for. . .

3

4 Henry Dethloff: Keep going. Yes sir.

5

6 Ike Rigell: OK. But they found that the vanes were all set at lift off. In other
7 words rather than being on zero they were cocked. The story behind that, there was
8 one of the guys . . . in the initial launches we always had the top experts from Huntsville
9 and many of them were Germans that would come down you know they designed it and
10 any question we had they were there to get us out of trouble. They had, and really they
11 wanted complete control over it anyway. One of the guys, a very good guy, a very
12 competent guy named Hans Vickner, a German, one of the last things he did before we
13 moved back to the blockhouse to launch, he was adjusting some, doing some last
14 minute things, and he adjusted what we call a potentiometer. It had a lock nut on it and
15 I don't know if you really know what I'm talking about, but it's . . .

16

17 Henry Dethloff: That's all right. Go ahead.

18

19 Ike Rigell: . . . it has a lock nut on it and then a screwdriver slot that can you,
20 and so Hans was just trying to make sure that thing was tight. And so he tightened the
21 lock nut and he didn't realize it at the time, but it moved the potentiometer so it was off
22 zero and had the vanes cocked. And the significant thing about this, the reason I tell
23 you this to come out with this story, that after they looked at the telemetry records and

1 saw that, nobody knew you know the cause of it. And Hans came up and told Von
2 Braun and the team, "I think I know what happened. I went out there and I was
3 adjusting this and I tightened it and I must've moved that off." And the lesson out of
4 that, was if you make a mistake . . .

5

6 Lee Snaples: Report it.

7

8 Ike Rigell: . . . and Dr. Debus had that philosophy. You make a mistake if it's
9 in you know in human error, you know you're going to make them, but if you'll come out
10 with it then. And Von Braun made Hans a hero out of that. In other words here's the
11 type, this is what we want.

12

13 Henry Dethloff: Good.

14

15 Ike Rigell: So there was a very big plus out of that. Even though it caused the
16 rocket to go out of control. But we learned. The second Redstone, I'm going back,
17 farther back in memory,

18

19 Henry Dethloff: Go ahead.

20

21 Ike Rigell: . . . it was I think a successful, I mean the second, yeah the second
22 one. But the third one got off the launch pad just a few inches and then it crashed back
23 on it. And that was, golly our hearts you know sank. We were devastated. We were in

1 the blockhouse not too far out and the explosion, we had a trench from underneath the
2 Pad back to blockhouse where the control cables and there was some stuffings in the
3 opening there where the cables came in to you know keep air conditioning, keep it cool.
4 And that explosion blew all of that stuff throughout the blockhouse. We really didn't
5 know what happened. And so we had our failures, but it's like you learn more from your
6 failures that you do your successes.

7

8 Henry Dethloff: Now did you stay with the Mercury Program pretty much through?

9

10 Ike Rigell: Yeah. Our next move forward, we were developing this Redstone
11 rocket for the Army for a nuclear warhead. And we had the Sandia people out of New
12 Mexico, you know the atomic, and they came in and they would put their dummy
13 warheads on. And I'm jumping a little ahead, but later our team split and part of our
14 team went out to the Marshall Islands and launched the Redstone and that's the first,
15 the only, air atomic explosion. And Dr. Gruener headed that. I took over his position
16 here and he went out there and headed that effort and it was very successful. But our
17 next thing here was to develop some re-entry, some ablative. They were interested in
18 re-entry materials you know that you could stand the heat of a re-entry. They designed,
19 they made some modifications to the Redstone that elongated the tank and introduced
20 a new propellant called UDMH, which was a little more difficult to handle than the old,
21 essentially the fuel of the Redstone was oxygen and a fuel kind of like kerosene. But
22 the UDMH had more energy. And that would go about 1,500 miles downrange. And
23 the Redstone was about 150 – 200 it was a short range.

1
2 Henry Dethloff: I'm interrupting. But recalling old times. I was a courier in
3 Jacksonville. I used to fly downrange with the messages I guess you were getting
4 ready to shoot between 1956 and 1958 to Alluthera and Turks and all of that good stuff.
5 Excuse me. I know what you're talking about.

6
7 Ike Rigell: Yeah. We made a trip downrange one time to see that down at
8 Antigua. . .

9
10 Henry Dethloff: On those C-54's out of Patrick?

11
12 Ike Rigell: Yeah. So you know when the, in 1958 I believe it was, a
13 geophysical year you know, there was a lot of interest world-wide and the Russians put
14 Sputnik up there. And I tell you that was a sad day for us. I mean to hear that. I
15 remember one night at the blockhouse about dark you could see as it would get in the
16 sunlight and hear that beep-beep. And we felt we could've done that. And you know at
17 that time the government made the decision that our efforts for the first satellite was
18 gonna be the Vanguard, which was as a civilian we wouldn't antagonize anybody by
19 using the military rocket. And so we finally, you know when Sputnik went up and they
20 finally gave Von Braun I believe that was a time General Maderis, "Big M" we called
21 him, you know does that name strike a bell?

22
23 Henry Dethloff: Yeah. Right.

1

2 Ike Rigell: He was in charge of the Program. He was Von Braun's boss. "Big
3 M" would come down here. You know he had his boots and his polish and his swagger
4 stick and he was a very military guy. Later he turned out to be an Episcopal Priest. I
5 don't know if you know that or not.

6

7 Henry Dethloff: No.

8

9 Lee Snaples: No.

10

11 Ike Rigell: Yeah. He had a miracle healing of cancer. In fact, maybe I digress
12 here a minute. . .

13

14 Henry Dethloff: That's all right.

15

16 Ike Rigell: . . . when he was diagnosed you know he had terminal cancer, and
17 Dr. Debus, Dr. Gruener, and I was in the group, several. . . Dr. Debus took his plane,
18 we picked up Maderis over in Orlando and went up to Huntsville. They were giving him
19 sort of a farewell party. And later he got miraculously, in his words, healed.

20

21 Henry Dethloff: And became a priest?

22

23 Ike Rigell: Yeah. And he was an Episcopal Priest over in Orlando.

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Lee Snaples: Before you go on, can I ask a couple of questions?

Ike Rigell: Sure.

Lee Snaples: Working closely with the Germans, what were your impressions of them?

Ike Rigell: I had the highest regard for them. They were top-notch people. My immediate boss, Dr. Gruener, for many years I had an excellent relationship. And I had the same, Dr. Debus, I'd put him up on a big pedestal. And Von Braun, I'd put him on the highest pedestal I could. I tell you the type of guy Dr. Debus (was), give you a little instance. To many people he was a stern you know sort of a cold guy or something. But one night in a countdown on a Redstone, I was sick. I was, I don't know I had a fever, I was deathly sick. And during the countdown I went out and at that time we had, we were all military so the medical was military and they had an old Army Ambulance out there you know in case of a problem and it had a place you could lay down. So I went out there to lay down and somebody told Dr. Debus that I was out there. And he came out there and says, "Ike, I'm going to send you home. You shouldn't be out here." I said, "No, Dr. Debus. I'll be all right. I'll be all right." (He said), "No. No. I'm going to send you home." And he said, "You're too sick to be out here." I said, "No. Let me stay." I don't know, maybe I was influenced by; I didn't want them to think they could

1 launch it without me I guess. So he finally agreed. And I stayed out there a while and
2 toward the end of the count I came back in. But the point is, that he cared about . . .

3

4 Henry Dethloff: He was genuinely concerned.

5

6 Ike Rigell: . . . because at that time I was just you know one of the run-of-the-
7 mill guys there. That was early in the program. And he was, he was a compassionate
8 guy. And Dr. Gruener was one of the most cost-conscious guys I mean you know you
9 hardly wouldn't think it from him. But as far as spending government money, he was
10 very tight. I mean he was technically you know those guys were top-notch guys.

11

12 Henry Dethloff: He was a good manager.

13

14 Lee Snaples: Were there any other, I guess I should just say non-Americans
15 around at that point? I mean did the British or the French or any of our other allies have
16 observers? Do you ever recall those people showing up to watch the tests?

17

18 Ike Rigell: No. They could've been. But I don't recall any foreign observers.
19 Later on when we got into the Jupiter Program and I can go into that. In fact we trained
20 the Turkish and Italian troops down here to fire. But where I think I was before, we
21 finally got the OK to launch the Explorer. And of course we had been saying, and Von
22 Braun our spokesman you know, "Give us a chance and we'll do it." And so we had a
23 lot riding on the line. Terry was very instrumental in that, Terry Greenfield. Because we

1 introduced a new thing you know that spinning upper stage, you know it had a cluster of
2 solid rockets with no guidance so to compensate for them balancing thrust you had to
3 spin that thing up there, that assembly. Terry was the guy we assigned to go up to
4 Huntsville and learn all about that because it was very critical you know. You didn't
5 want the thing to get away and yet it had to spin properly. And that was one of our most
6 critical things and Terry did a super job on that.

7

8 Henry Dethloff: That's right. I remember him saying. I was rather surprised that
9 Explorer I was one of the most memorable events in his career.

10

11 Ike Rigell: Yeah. I mean because it gave our country, I think the thing it was,
12 it gave our country a little bit of a lift. Because you know the Russians by that time had
13 put the dogs up there. And you know some heavy stuff. And we were just
14 dumbfounded and embarrassed and whatever you want to say. And losing prestige.
15 And then the next thing as far as progression was when the manned program came
16 along, we were given the opportunity to launch Shepard and Grissom.

17

18 Henry Dethloff: Now in the transition to NASA, do you have any strong recollections
19 of that happening and how you felt about it?

20

21 Ike Rigell: Not really. It was just, to us it was more of a paper thing you know,
22 that we were now NASA. And I think the plus thing that we felt that we had more life in
23 the program. Because you know there was a tremendous battle going on. Well, let me

1 jump back to the Mercury Redstone for a moment. You know it put a new dimension on
2 our checkout. Now we've got a man on board. We gave it all we had before but having
3 a man, that was a little different than launching a dummy warhead. One of our test
4 rockets, I don't know if you've heard about it or what, but we had a terrible mishap that
5 the rocket lifted off about an inch or so and the escape tower took off and the rocket sat
6 back down.

7

8 Interviewer (?): A one inch launch.

9

10 Ike Rigell: That's right. That was the shortest launch. And there the thing sat
11 full of stored energy. You know the oxygen is boiling off and we have no control
12 because when it sat back down it didn't reconnect like it was. We finally you know
13 found out that we had what we call a sneak circuit in there that allowed the cutoff signal
14 from the ground to go up to cut the engine off. And when you cut the engine off that
15 was a signal the upper stage thought that we were in flight when the engines cut down
16 so the escape rocket went off. And that was embarrassing.

17

18 Lee Snaples: Now, and I think it was Terry that was telling about that, they then
19 had to send people out to connect that thing back up and in effect turn it off and disarm
20 it.

21

1 Ike Rigell: Well, later we did. We had to let the oxygen boil off. Fortunately,
2 the vent valve you know built up pressure; it would vent. And later of course we had the
3 destruct system on there and I think maybe that's what he's talking about.

4

5 Lee Snaples: Was that, I mean isn't that a little scary to have that rocket sitting
6 out there?

7

8 Ike Rigell: Oh absolutely. That's the worst thing you could imagine.

9

10 Lee Snaples: Was there no discussion of evacuating or . . .

11

12 Ike Rigell: Well, you know the security and safety people got everyone out that
13 was not, of course we were all back in the blockhouse. And we felt we were safe there
14 is it blew. But of course no one was in the area. But we had some, a number of failures
15 in there. I remember Redstone 25; it took off and went horizontal for about a mile and
16 crashed. A little funny anecdote to that; we had a big black janitor out there that you
17 know we got friendly with him. And that was one night and we didn't have the foggiest
18 idea of what happened to the rocket that night. The next morning I came back in. This
19 big janitor, black guy, called me over and said, "Mr. Ike come over here. I want to talk to
20 you." So I went over. I said, "What is it Johnny?" He says, "I knows what happened to
21 that rocket last night." I said, "You do?" He said, "Yes, I know. And I want you to go tell
22 that Dr. Debus man what happened." I said, "Well OK, Johnny what happened?"

23

1 He said, "It was them Communists." He says, "I know you fellows and you'd never let
2 one do that." I said, "You're right, Johnny."

3

4 {laughter}

5

6 Henry Dethloff: The Communists did that. Well, that got the flavor of the times.

7 That's right.

8

9 Lee Snaples: Yeah.

10

11 Ike Rigell: So I told Johnny that I appreciated that. And he was convinced that

12 . . .

13

14 Henry Dethloff: I bet a lot of people would have been.

15

16 Ike Rigell: The next progression in our area was the, you know we were
17 moving in more of the threat, we were in the middle of Cold War, was to develop an
18 intermediate range ballistic missile. And the Air Force had the Thor going and the
19 competitor to that was the Jupiter. At one time they were trying to sell the Jupiter as a
20 submarine-based, I mean launch from a submarine. But the liquid propellant, that was.

21 . .

22

23 Lee Snaples: Just not gonna work.

1

2 Ike Rigell: . . . yeah. So we developed, we-the Marshall Space Flight Center
3 developed that had an improved rocket engine and we tested it here. And that's where
4 we begin to put these probes out toward the moon and then more satellites from the
5 civilian side. But the military side it was developed to be a good weapon and it was
6 later deployed in Turkey and Italy and was a factor in the Cuban Missile Crisis to use
7 those rockets and Russia knew, you know, they feared that thing. And when you're
8 talking about International there the Turkish and the Italians would send their military
9 troops, their rocket people up to Huntsville and they would go to school to learn it. And
10 then their graduation was to come down here and launch one under our supervision.
11 So they had quite a military involvement in that. And of course our job was to oversee
12 their launch and make sure they didn't push the button before the Range Safety people
13 were . . .

14

15 Henry Dethloff: Said OK.

16

17 Ike Rigell: and one of the interesting launches in that period. . . Does Edward
18 R. Murrow mean anything to you?

19

20 Henry Dethloff: Oh yeah.

21

22 Lee Snaples: Um-huh.

23

1 Ike Rigell: You know, he was the Walter Cronkite. . . he brought his team
2 down here and they were gonna film a rocket from the day it arrived on through launch.
3 And so we were excited about that. We were giving it our best shot. So everything
4 went pretty well. And when we pushed the launch button, the fire button, that rocket
5 went up a few feet and went over and crashed about 200 . . . It was one of the most
6 embarrassing things that we ever encountered. You know it wasn't uncommon in those
7 days to have a terrible mishap. But the success we enjoy today was based on . . .

8
9 Henry Dethloff: The misadventures of the past?

10
11 Ike Rigell: Yes. Yes. And so the Jupiter turned out to be a very good rocket.
12 Later there was a lot of political in-fighting up in Washington about who was gonna have
13 the missiles you know. The Air Force, they said it's a bomber. And the Army said it's
14 just long-range artillery. It belongs to us. And they finally decided the Air Force would
15 have that because they were coming along later with the ICBM, the Titan and the Atlas,
16 which John Glenn rode. And so that was sort of the end of our part in that. But our next
17 progression was the Saturn IC, which we launched from 37 and 34. And that was, you
18 know had more capability. That was a cluster of Redstone and Jupiter tanks. It turned
19 out later you know that's what we launched Skylab, which was a very good machine.

20
21 Lee Snaples: Was there much fear here that perhaps NASA or perhaps you all
22 would lose the Programs to the Air Force? Or was the assumption you could just move
23 back over and run them for the Air Force again?

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Ike Rigell: Well, there was concern during that ballistic, during the time from the Jupiter was competing with the Thor. And they picked the Thor not because of its technical capability over the Jupiter but that was a political thing that, it turned out you know that's been a work horse rocket. But where we got new life was when Kennedy said, "We're going to the moon and we're going in this decade." You know, that was an awesome . . . You know it gave him credit for having the faith in us that I'm not sure we had. You know that was. . . during this decade.

Lee Snaples: What was your reaction when that statement came out when he made that speech?

Ike Rigell: Well it was, the excitement of having that opportunity, I'll tell you if you go back then, in that early Redstone in that time-frame, if you looked at the work-force out here, we were all young people. Relatively, I mean late 20's probably. And in that time frame you're not, you're more of a can-do than you can't. Because let me tell you I've seen back then you depended more on the individual because we didn't have much paperwork. You know if you told me that you had checked something, you had done something. OK that's good enough. I didn't have a piece of paper that had 15 signatures on it. And later as you get older you get a little more cautious. You think well now this thing here, if this fails I'll look bad. So we'll get a committee. . .

1 Lee Snaples: Was that, and I'm particularly curious about that, do you think that
2 was a case of age or was it . . .

3

4 Ike Rigell: Well it was, no not entirely. It was a case of age and I think a case
5 of growth.

6

7 Lee Snaples: That as you got more people. . .

8

9 Ike Rigell: You can't operate like the Saturn V, you couldn't operate it like we
10 did the Redstone because I knew you, I knew you, and I knew what you did. And if you
11 told me you know. . . but there's so many, it's so big. It's kind of like a "Mom and Pop"
12 grocery store and Wal-Mart you know. You can operate a "Mom and Pop" on a piece of
13 paper. Our countdown for the Redstone was probably like this and we didn't even use
14 that because we knew. But as you got. . . later and so much bigger you had to; it
15 demanded a more complex paper system.

16

17 Lee Snaples: Was it in part too, because the rockets and the systems were
18 becoming more complex?

19

20 Ike Rigell: Yes. You know the Saturn V and Shuttle you know people look at
21 the Shuttle like it's an airplane, some people do, and take it for granted. But it's still a
22 rocket and it's a complex piece of machinery. The Saturn V was very complex. So you
23 know you had the best technical minds all over the country, from Houston, from

1 Marshall, from all industrial. Some of those guys maybe had a part that big and he
2 knew it intimately. Here we had to take it all and put it together and make it work and it
3 required just a vast paper system, much more. In you know, the early days of “Are you
4 ready to launch,” you know Dr. Debus sort of come around and he’d want a little session
5 before every launch. And we’d go with him and he could ask you, you know you’d
6 prepare yourself because he could ask some pretty prevalent questions because he
7 was highly you know a technical man. And later you know the Readiness Reviews got
8 to be a big formal thing you know. You’d go to the Flight Readiness Review over here
9 and you’ve got people from all over the country coming in and elaborate presentations
10 as opposed to early, we’d sit around the table like this and Dr. Debus would ask
11 questions, yeah. And so that’s . . .

12

13 Henry Dethloff: And you were ready?

14

15 Ike Rigell: Yeah.

16

17 Henry Dethloff: Did you also notice in this changing time from Saturn/Apollo
18 Program and did you feel a greater public presence that also might have affected how
19 you operated?

20

21 Ike Rigell: Well we felt the public presence the first time that you know they’re
22 gonna put TV on it, gosh I thought that’s was terrible. You know they might make a
23 mistake here and it would be shown all over the world and so, it’s, you’re in a fish bowl.

1

2 Henry Dethloff: Was there a specific time when that happened? I don't remember.

3

4 Ike Rigell: I don't remember the specific time, but it was in the, I guess, early
5 60's.

6

7 Lee Snaples: I'm sure.

8

9 Henry Dethloff: Yeah. And it built from there on . . .

10

11 Ike Rigell: Oh yeah. It built, yeah. And then it was common. Because you
12 know before the Saturn V, that was a big million people on the, for the first one, Apollo
13 11, I guess on the shore and out here.

14

15 Henry Dethloff: And the Apollo Program, you were there during most of that . . .
16 launches?

17

18 Ike Rigell: Right.

19

20 Henry Dethloff: All of them?

21

22 Ike Rigell: Yes.

23

1 Henry Dethloff: Any ones that stand out, I assume they will, but . . .

2

3 Ike Rigell: Well, um, I guess all of them did in a way, but the one that probably
4 gets overlooked in as far as the significance or importance, is Apollo 8. You know that's
5 the one where Borman went around the . . .

6

7 Henry Dethloff: the moon

8

9 Ike Rigell: 'cause we were called in. I tell you a guy that had more to do with
10 the success of this than I'd say just about anybody I know is Rocco Patrone. I don't
11 know if you guys talked to Rocco . . .

12

13 Henry Dethloff: No.

14

15 Ike Rigell: You should. But he was, he called us in and told us you know,
16 NASA wanted to move this thing up, because they were concerned you know the
17 Russians were going to the moon. And this would be the first time that the Saturn V
18 had been you know launched. And we're talking about a new Complex, Complex 39.
19 And with a new, you know we had a S-1C stage, a S-II stage, S-IVB, and what we had
20 under our control at that time we had evolved into organizationally, we were called
21 Launch Vehicle Operations. Dr. Gruener was the head of that and I was his Deputy and
22 Chief Engineer. And then they had the spacecraft side of the operation and Rocco was
23 under Dr. Debus who was the head of both of those. So we had you know, they built

1 Complex 39 and that new control, that's the first time we were in a Control Room not a .
2 . .

3

4 Lee Snaples: Bunker.

5

6 Ike Rigell: . . . not a bunker, not bomb-proof. And everything was just
7 magnified so many times. And that's the first time we introduced automation. And
8 automation, you know you get a good laugh out of it today, but it was pretty advanced.
9 If you talk about in the 60's, we had a RCA 110 computer that you could put it, it'd take
10 a couple of rooms like this. In fact, one of the problems when we installed it over at the
11 Firing Room at 39 was to get enough air conditioning to cool it. We had false floors
12 under there. And that was a monster. And we did a little bit; progressed each launch
13 with a little more automation. But the early days we had some terrible problems with
14 the, you know, the computer malfunctioning . . .

15

16 Henry Dethloff: Tubes burning out and . . .

17

18 Ike Rigell: Yeah. It was just a nightmare. In fact even some of us that wanted
19 automation wanted to junk it, but we struggled through it. And talking about the Apollo
20 8, that was just you know I guess one of the most significant things we ever did was to
21 successfully launch that thing from the new Complex, a new rocket, and new
22 procedures. We had to organize completely different as far as how we did a
23 countdown. And in those periods, even though we had the computer there, it primarily

1 prepared the flight computer for launch, it didn't do, we gradually introduced more. The
2 countdown was conducted by operators on a console and they had switches and
3 looking at meters and looking at lights and looking at strip chart recorders. And they
4 had to make, engineers had to be prepared to make a real-time decision. You know
5 cut-off or proceed. And have you've been in Firing Room 39?

6

7 Lee Snaples: We've seen, yeah.

8

9 Ike Rigell: You know you're looking at vast, several hundred people out there,
10 and many of them have a . . .

11

12 Henry Dethloff: Trigger, button?

13

14 Ike Rigell: Yeah, a button and the thing you have to be concerned about is a
15 cut-off that that you don't want. And one of the nightmares is most of the false alarms
16 and so forth were actually a result of a bad indicator. . .

17

18 Henry Dethloff: Gauge, right. Yeah.

19

20 Ike Rigell: . . . not the . . .

21

22 Henry Dethloff: The system.

23

1 Ike Rigell: Yeah. You could have a ten-thousand dollar valve that was
2 designed perfectly by a mechanical engineer and then he'd put a 50-cent micro-switch
3 on it to tell you if it's open or closed. And what would fail would be the switch and not
4 the valve. But if you've got a red light you know you've got to . . . if it was a valve you
5 know you could look at pressures and flow rates and try to get _____. So we
6 worked up backup parameters that would, because otherwise we'd never get through.
7 The first we called it a CDDT, countdown demonstration test, on that Saturn V took us
8 about 17 days. I mean we'd thought we'd never get there. Because every time you'd
9 get down to zero you know something would go wrong or even prior to that and we were
10 making modifications up to the last minute. It was a challenge. And then the day of the
11 launch, we had a few problems in the countdown, but things went well and we launched
12 that baby and of course you could watch it on the screens up there, the tracking, and we
13 were just you know, I can't tell you how. . . you know of course I always said I would
14 pay to work out here you know. I loved it that much. I think we all did, because I spent
15 many a night out here. Dr. Debus had a place over in the Launch Control Center. He
16 had a little room there, he had a couch and a little bathroom and all of that stuff. And a
17 little table about like this. And I had a key to his place out there that I could you know
18 spend a few hours. And I did a number of nights. I'd go into his place there. But the,
19 all the Saturn V's that we launched were all successful. And if you look back much of
20 the rocket was what we called a simplex system, that means that there single, you know
21 you got a relay here. We didn't have all of the micro-electronics. And if it fails, you
22 know you bought the farm. And the spacecraft up above had a lot of redundancy and
23 rightfully so. But you had to sacrifice something as far a weight so much of the S-1C

1 and S-II and S-IVB stage was a simplex system. In other words you had a single
2 failures and they you know they worried us quite a bit. But we launched Apollo 8 and
3 that circled the moon. And then Apollo 9 as I recall was an earth orbit that did some test
4 of the LEM and then Apollo 10 was Stafford, you know made a dip coming down toward
5 the lunar surface, and the Apollo 11 was the one of course we'll never forget. And
6 Apollo 12 I think that was the one with Conrad in it where it got hit by lightening as it,
7 you know the plume, and that was, golly that was a miracle that thing could survive that,
8 but you know it was a good spacecraft. And Apollo 13, of course that was the one
9 where Lovell and _____ you know had the explosion up there and . . .

10

11 Henry Dethloff: And it took the LEM back.

12

13 Ike Rigell: . . . yeah. And then we launched Apollo 14. That was I think

14 Shepard with his golf clubs.

15

16 {laughter}

17

18 Ike Rigell: That was a good one. Shepard of course was the one that on the
19 first Redstone, good guy.

20

21 Lee Snaples: What was reaction back here when he did that?

22

1 Ike Rigell: Oh, I don't know, I guess they thought it was like to see a little
2 humor in it.

3

4 Lee Snaples: Did you ever catch a reaction from Debus on that one?

5

6 Ike Rigell: No.

7

8 Lee Snaples: Oh, OK.

9

10 Henry Dethloff: Now, as Apollo is going, you're going down the line toward the
11 finish, what is going to follow Apollo? Were you worrying about that at this point? What
12 was on the drawing board?

13

14 Ike Rigell: Yeah. Well, as I recall Dr. Miller and Sam Phillips you know they
15 were the guys, and Miller one of his good traits he would come down occasionally and
16 he would hold a tea over here in the Auditorium for the ladies and they liked that. He
17 would give us you know what they're trying to do for the future. And at one time they
18 had a Shuttle that was a fly-up and a fly-back and land, I mean the booster. It was not
19 the Solid Rockets. And I guess, unfortunately the Congress you know the funds weren't
20 available. But the Shuttle was the, and I think it's sad now that we don't have
21 something. Because in the early days as I recall like the Redstone and the Jupiter and
22 the Saturn V there was always an advance through the Marshall Space Flight Center
23 and Rocketdyne had an engine ready to go and now we need to build something to put

1 on this baby. Because you know we had the old Redstone engine, that was about a
2 75,000 pound. That was a take-off of the V2. By the way, some of those Redstones we
3 used some V2 parts. We used some of the accelerometers and some of the relays
4 were actually out of the old V2 scrap heap. And then we had the H1 engine and then of
5 course the F1 for the Saturn V and the J2 engine for the, they was the same for S-II
6 Stage and the S-IVB Stage.

7

8 Henry Dethloff: Now it was about 1972 that they really approved the Shuttle and
9 KSC is designated responsibility for developing Shuttle launch facilities.

10

11 Ike Rigell: Yeah.

12

13 Henry Dethloff: Are you getting in on that early stage of Shuttle launch operations?
14 Do you remember anything particularly about that? While Apollo is going on, are you
15 beginning to divert . . .

16

17 Ike Rigell: Yeah. Yeah we were doing that. And there was a program at that
18 time to document all of your problems in the Saturn V that could be translated and not
19 repeat those on the Shuttle. And I mentioned one of them a few minutes ago. If you're
20 going to build something, make the sensor that you're going to tell whether it's working
21 or not as reliable as the thing itself. And the other thing that I guess some of us took
22 issue with is the optimism of, "We're gonna launch this baby in two weeks and we're
23 gonna fly 60 a year."

1

2 Henry Dethloff: Yeah.

3

4 Ike Rigell: We couldn't see where we had gotten that you know where you
5 could do that reliably. You know that . . .

6

7 Henry Dethloff: Where was that coming from mostly?

8

9 Ike Rigell: Washington.

10

11 Henry Dethloff: Yeah. OK.

12

13 Ike Rigell: As far as I know, it was coming from them. It wasn't coming from
14 us. Because we'd try to express, "You know, hey you're getting a little too, you're not
15 with it. You're . . ."

16

17 Henry Dethloff: Was there some concern that since the goals of the Lunar Program
18 had been met, we really didn't need to do anything else?

19

20 Ike Rigell: Well, no we would've liked to have continued to launch. In fact, of
21 course we would've like to have seen an effort to go to Mars.

22

23 Henry Dethloff: Yeah. OK. That was talked about.

1

2 Ike Rigell: Yeah. And then everything was put on the Shuttle. So . . .

3

4 Henry Dethloff: What about the conversion of 39 from Apollo to Shuttle? What was
5 the general character of that conversion in terms of engineering?

6

7 Ike Rigell: Well it required some engineering. If you look at those consoles
8 out there, I don't know if they're the same ones they started with. I haven't kept that
9 close of track, but they took the old Apollo consoles and turned them upside down. And
10 that turned out to be the configuration for some of those consoles. But to adapt it, it
11 was, I'll tell you a guy that you should talk to in all of this, is Don Buchanan. Have you
12 ever . . .

13

14 Henry Dethloff: No.

15

16 Ike Rigell: You ought to put his name (down). Don was head of the
17 Engineering that designed Complex 39, and I'm talking about total thing; the pad, the
18 propellant, the crawler system.

19

20 {Telephone rings in background. Dr. Dethloff answers it.}

21

22 Lee Snaples: While he's busy on that, let me ask you. The story you told about
23 Debus and the guy who had turned the bolt too far. What was the gentleman's name?

1

2 Ike Rigell: Hans Fitchner, H-a-n-s, F-i-t-c-h-n-e-r I believe. He was out of
3 Huntsville. And it was actually Von Braun that he; he was head of the electrical lab up
4 in Huntsville. And he was the guy that told Von Braun.

5

6 Lee Snaples: OK.

7

8 Ike Rigell: Very good guy.

9

10 Lee Snaples: You ended up in, I saw, in Cargo?

11

12 Ike Rigell: Pardon?

13

14 Lee Snaples: You ended up in Cargo?

15

16 Ike Rigell: When they went to the phasing out, our last, my last launch as far
17 as the rockets we had grown up with was the Apollo-Soyuz in 1975. That was the link-
18 up with the Russians. You know Stafford on our side and I don't remember the
19 Russians. And part of that was Skylab in 1973. And then we were reorganized in here
20 and a big part of the Shuttle Program was going to be the Payloads area. So I wanted
21 to get into a different phase of it and that was the Payloads. Let me go back a minute
22 to the Soyuz-Apollo, that's the, you know that was launched in mid-July of 1975 I
23 believe. And of course the Russians were launching first and you know we both, you

1 know that was Cold War time too, so they put their part of it up there. And it was up to
2 us to you know we were under the gun you know. OK. You're counterparts have done
3 their job and now it's up to you. And in mid-July in almost the time frame we're in now
4 you know these afternoon thunder . . . and we were launching in mid-afternoon and the
5 thunderstorms were really a threat to our being able to launch on time. That's where
6 KSC . . . well I guess it started with Apollo 12, but that's where KSC became very
7 interested in lightening and a study. They convened a group of the lightening experts
8 here. And I remember one interesting meeting over in the Mission Briefing Room. We
9 had the room full of lightening experts and I don't know that two of them agreed at all.
10 They all had opposing . . . in fact we did a lot of, back on Complex 39, lightening
11 prevention was one of the big factors there. You know that tower that's up on there with
12 those wires that come out to divert the . . . And they were talking about seeding the
13 clouds and dropping foil and you know all kinds of things. But you know we did launch
14 on time and successful. And that was the last launch that I participated. I was Launch
15 Director, for Vehicle Launch Operations I was the, Dr. Gruener had retired, so I had
16 taken his place. We were set up then under Rocco Patrone. He had the Launch
17 Vehicle Operations which was from the Instrument Unit down and then had the
18 Spacecraft side with John Williams, Head of that for the Spacecraft. And then we
19 reorganized after that and that's when I went into as Head of the Shuttle Payloads. It's
20 called Cargo. And one of our prime projects there was a joint effort with the European
21 Space Agency to develop and launch the Space Lab. Of course at that time too you
22 know as I mentioned earlier, they were talking some very optimistic programs. You
23 know 60 launches a year and turn that baby around every 2 weeks and Payloads was

1 gonna be the prolific. I mean that was where a lot of the action was and where and it
2 was one of the last areas around here at that time that NASA engineers could do a little
3 more on their own. By that I mean we had transitioned into a Contractor. Well back in
4 those earlier Programs it was Contractor, we had Contractors; Boeing for the S-IC, and
5 Rockwell for the S-II, and McDonnell Douglas for the S-IVB, and IBM for the instrument
6 unit and ground checkout equipment, and Boeing for the propellant loading equipment.
7 And our job in NASA was to integrate all of that. But jumping back to the Payloads we
8 had a you know something called Level IV Experiments where the guys would come in
9 and it gave our guys a chance to do more hands-on type operations there. And so at
10 one time in that period I was, I had the Shuttle Payloads and also the unmanned, for a
11 while, the unmanned launch over across the way there where John Elon's group had
12 originally had that.

13

14 Henry Dethloff: And you were busy with the Expendable Payloads Operations?

15

16 Ike Rigell: Yes. Yes.

17

18 Henry Dethloff: And were the Intel-Sat going up about that time? Or was that
19 earlier? That was earlier.

20

21 Ike Rigell: I think that was earlier. Yeah.

22

23 Henry Dethloff: Yeah. 1968, 1969.

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Ike Rigell: Yeah. Later Chuck Gay had that operation over there.

Henry Dethloff: In terms of general, you kind of eluded to it, but how is the management scene changing here? You were talking about the Contractor having a greater role. How would you explain that or define it?

Ike Rigell: Well, when we started out with the Redstone rocket we had no Contractor. We, them was us. In other words, if we wanted a cable laid from the rocket to the Firing Room we did it. We had some technicians. We had no Quality Control. Now don't misunderstand me, we had quality control, but it was built in. Because I recall when the decision was made, "We'll have no more hands-on," that means our technicians either had to go get another job or they had to be a Quality Inspector under training. And some of those guys took that very hard, you know. One guy came up to me and he was crying, he says, "You don't trust me." I said, "No. We trust you. That's the way the system is going. Now you're gonna be the Inspector not do it." And so that was difficult for some of those. The engineers you know can transition into that better. But some of the technicians had difficulty. So we transitioned into more of, I'd say, an integration role over all of the Contractors. We had at that time I guess at peak about 8,000 Contractors with Boeing, IBM, Rockwell, and McDonnell Douglas. And we had about 400 at that time I guess peak Civil Servants in our particular area that was the managers of that effort.

1 Henry Dethloff: And how did you feel about that transition, the changing role of the
2 engineer?

3

4 Ike Rigell: Well I felt it was necessary. We you know it had to. As you got
5 bigger it's like the paper system had to grow.

6

7 Henry Dethloff: And you're gonna retire in 1981? Is that what you. . .

8

9 Ike Rigell: Yes.

10

11 Henry Dethloff: Now was it before or after April? The Shuttle. Were you here?

12

13 Ike Rigell: Yes. I was here.

14

15 Henry Dethloff: OK.

16

17 Ike Rigell: Now. Wait a minute. I was here. I retired and I was retained as
18 annuitant, 2 or 3 of us, Don Buchanan, and Ray Clark. And then when I retired, I went
19 to work as a Consultant for USBI, which I mentioned earlier. And after a few months of
20 that I went permanent with USBI as their Chief Engineer down here and later I was
21 Head of, I took over the Florida Operations for USBI.

22

1 Lee Snaples: Was that hard to kind of transition into being a Contractor rather
2 than being NASA?

3

4 Ike Rigell: Yes to some extent. You saw, I appreciated some problems that
5 we gave the Contractors. {laughter}

6

7 Henry Dethloff: Oh. OK. From the other side?

8

9 Ike Rigell: From the other side. Because you know we had a system here that
10 was Award Fee, various forms of that. In other words, the Contractor would get graded
11 on how they performed and they were very, that was a very serious matter because
12 how they performed was how their job, you know because the more, the better they
13 performed the more fee, the more profit to the home Corporate Office. So when I got on
14 the other side and saw what all you had to do to please these NASA guys . . .

15

16 {laughter}

17

18 Henry Dethloff: But that's also a testimonial to the integrity and so forth of the
19 NASA Operations.

20

21 Ike Rigell: Yeah. Yeah it is. In fact with USBI our Contract was sort of unique.
22 It was really out of Marshall Space Flight Center, but we were on the KSC property here
23 and so we had to answer to those guys at Marshall and they were pretty picky and also

1 especially the KSC Safety down here. They'd walk through our plant over here and find
2 something that wasn't just right and we'd get a phone call. And of course so many
3 times they were right. We had to you know respond to it.

4

5 Henry Dethloff: In looking back, what would you say would be the most memorable
6 experiences you had at KSC and also I guess from that comment on the Space
7 Program in general as you've seen it unfold.

8

9 Ike Rigell: Well . . . maybe it's a little hard to answer. I'd say . . .

10

11 Henry Dethloff: Maybe it's not a good question.

12

13 Ike Rigell: Well . . . I'd say the launch of the first Redstone you know, you're
14 heart was pounding. And then when we launched Explorer, that was certainly a
15 highlight because you know I just couldn't hear enough of the news you know about our
16 little satellite in orbit there. And that was a, to that point, that was a highlight. And then
17 when we launched Shepard, that was another big highlight. And then certainly when we
18 launched Apollo 8 to send the guys around the moon. Of course the low point was
19 when we lost the three astronauts over on 37 in that ground fire.

20

21 Lee Snaples: Apollo 1.

22

23 Ike Rigell: Yeah. That's when we lost Grissom and Chaffee and . . .

1

2 Henry Dethloff: Were you there?

3

4 Ike Rigell: No. I was on a trip to McDonnell Douglas out on the West Coast.

5 And the guy that sits in for me when I was gone, he called me and he told me we had a

6 terrible problem here but he couldn't tell me. He says, "I can't talk." And so you know

7 we got together out there with the McDonnell people and a few that was in the party that

8 I was on, and you know we were just devastated.

9

10 Henry Dethloff: Yeah.

11

12 Ike Rigell: And we weren't getting the, you know we knew something bad but

13 we couldn't get through. Because they had, and rightfully so, put the _____ on

14 the talking.

15

16 Henry Dethloff: When you got back were there dramatic changes in procedures or

17 operations or safety?

18

19 Ike Rigell: Yeah. In fact, I'd say every mishap NASA has experienced there

20 was always a level of detail. Of course after the Apollo fire we went through everything

21 again and again. And what could we do to prevent and you know out of that of course

22 came drastic changes in the Spacecraft itself. And on our end, on the booster, you

23 know we just, we looked at everything we could possibly look at. And we introduced

1 more I guess a level of management to oversee smaller things that they had not done
2 before.

3

4 Henry Dethloff: In other words, testing and so on became increasingly complex?

5

6 Ike Rigell: Yeah. Yes. Yeah.

7

8 Henry Dethloff: And the system becomes increasingly complex?

9

10 Ike Rigell: Yeah. And you had more . . .

11

12 Henry Dethloff: But also increasingly efficient?

13

14 Ike Rigell: Yes. Well when you say efficient, I guess you're talking about
15 success?

16

17 Henry Dethloff: Yeah. In general.

18

19 Ike Rigell: Yeah. It was a plus to ensure success. Because we always tried
20 to look at it, "If I was riding that baby, what would I want these guys to do?" But we had
21 you know we had good people. You know, like uh, I don't know if you know how Terry
22 got into the system or not. We had, when we were with the Army you know they were

1 still drafting people and they drafted Terry. And I don't know who all you've talked to,
2 Pete Minderman . . .

3

4 Henry Dethloff: We haven't talked to him yet, but we have him on our list.

5

6 Ike Rigell: Oh. OK. Pete was Head of the Engineering when he retired. You
7 know, top notch people. And they were down here as assigned to us as . . .

8

9 Henry Dethloff: Enlisted men.

10

11 Ike Rigell: . . . as enlisted men.

12

13 Lee Snaples: Yeah. We were talking to Alan Parrish on Thursday and he was . .

14 .

15

16 Ike Rigell: Yeah. I used to . . . Terry was . . . we'd send him to Huntsville and
17 the military up there would want him to stay in the barracks and eat in the mess hall.

18 {laughter} and we'd have to scheme to get Terry in a motel.

19

20 {laughter}

21

22 Henry Dethloff: That's good.

23

1 Ike Rigell: But we were very fortunate to have them because they were top
2 notch guys.

3

4 Henry Dethloff: I'm sure since you've retired, you still keep a good close eye on
5 KSC.

6

7 Ike Rigell: Well, fairly close. We have a breakfast once a month, it's not an
8 organized thing, that about 60 of us gather and swap stories. And the stories get bigger
9 as the years go on. And it's just an informal thing. We meet down at Fat Boys in
10 Titusville and gather and break up. And I think all of us look forward to that.

11

12 Lee Snaples: Has there been people adding to that? And I guess by that I mean,
13 or is it those of you who came along at the same time?

14

15 Ike Rigell: Mostly, but we see as guys retire you know, they join, and we have
16 a few Contractors that join it. We don't look at them any different. I think that's the key
17 thing, that we had a good group of Contractors here that we you know some of the best
18 friends. And sometimes you'd face a situation where you know you'd agree with a
19 Contractor as opposed to your own people.

20

21 Lee Snaples: I guess I was just wondering to what extent the success at KSC has
22 been or could be attributed to kind of a group of people at the right time at the right
23 place who moved through.

1

2 Ike Rigell: Well I think that's maybe something to that and again I'll tell you, I
3 think one of things that made it was the age of the people when we started. I mean you
4 didn't go out and hire a guy that had 30 years of rocket experience.

5

6 Henry Dethloff: They weren't there.

7

8 Ike Rigell: And it's like a little kid that's learning how to walk. If you put him
9 out there on the floor in front of all of us if he stumbles and falls it doesn't embarrass
10 him. He gets up and goes again. And that's like we were. You know we'd have a
11 failure. We'd get up and go again. But as you get older, you do get a little more
12 cautious and think of how would I look if I fail. And that's where I think, I mentioned
13 earlier, you think well maybe I'll get a committee to do this. Then if it flops, we'll spread
14 . . .

15

16 Henry Dethloff: It's somebody else's responsibility.

17

18 Lee Snaples: the blame.

19

20 Ike Rigell: . . . spread it around to the committee.

21

22 Henry Dethloff: That's the way of the world.

23

1 Ike Rigell: Yeah.

2

3 Henry Dethloff: Any last comments or words you'd like to . . . and don't feel _____
4 this is a final.

5

6 Ike Rigell: No. I'd just say that that was such an exciting time that if I could
7 have afforded it, I would have paid to work out here and you know I spent long hours,
8 which all of us did.

9

10 Henry Dethloff: One quick question. I'm sorry. I just thought of something. After
11 Debus retires in 1975, Schirra comes and there was sort of a hiatus. Now you're
12 between Apollo and Shuttle and no manned flights for quite some time. Was there a
13 sharp contrast in management style or in operations or anything at all in that transition
14 from . . . because it had all been Debus before and now it's a new . . .

15

16 Ike Rigell: Yeah. Well Schirra didn't have the stature in my view that Debus.
17 He had some good points and he had some weaknesses as you probably know.

18

19 Henry Dethloff: And was his style markedly different than Debus in terms of
20 interacting with the engineers and . . .

21

22 Ike Rigell: Well, the uh, let's see, I don't know how to go at it. But during the
23 height of the Apollo Program, Rocco Patrone was a powerful figure here. Not only here,

1 but he had a heavy influence in Houston, and Marshall, and Washington because he did
2 his homework and he was right. And he had the complete trust of Dr. Debus. I mean
3 he had . . . Debus would support Rocco. And of course Rocco left and went to
4 Washington after Apollo 11. And later when Schirra was here from our side they gave
5 more control to the Program Office and less here and they were the more dominant
6 factor. And of course that was under Schirra's, I don't know his philosophy or whatever,
7 but we didn't have the, from our side Launch Operations, we didn't have the clout that
8 we enjoyed with the Rocco/Debus combination.

9

10 Henry Dethloff: Thank you very much. Elaine do you (have any questions)?

11

12 Lee Snaples: Thank you very much, sir.

13

14 Henry Dethloff: Well we really appreciate it.