

1 **Bumper 8**

2
3 **50th Anniversary of the First Launch on Cape**
4
5 **Canaveral**

6 **Mr. Norris Gray's Oral History**

7
8 **Kennedy Space Center**

9 **Held on September 25, 2000**

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19
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23 **Kennedy Space Center**
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10 Approval Signature/Date Sheet

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Dynacs Inc.

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22 All redlines from all participants have been incorporated in this transcription
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Roger Launius: Ok, it's the 25th of September 2000 and we're talking to Norris Gray in Indialantic near the Kennedy Space Center. We're talking about the Bumper project, specifically. We'll start with a little background. Can you tell us when and where you were born, how you grew up; those sorts of background experiences?

Norris Gray: I was born in the good state of Texas, Wichita Falls, in 1920. I think that makes me about 80 years old. And from there, my folks moved to Colorado. They didn't like the winters in Colorado, so they decided to move to Tampa, Florida. That was back in 1927. The trip down I still remember vaguely because we had to stop on the way down from Colorado in different filling stations. There was no place to camp so we stayed around filling stations at night until we got into Tampa. And then I grew up in Tampa, high school, started in college there. And then World War II started so I signed up with the National Guard to get my year in, hopefully. But the war continued on and I finally got out in June of 1945. I got out real early because of super high points. I'd been through Africa, Sicily, Normandy, Belgium, and across the Rhine at Remagen. And just as soon as we got across the Rhine to really start the missile industry off, we turned left from the Rhine River, went north up through the Harz Mountains and this is where one of our Generals, by the name of Louis Mannus discovered what he thought was the V2's. He hollered, "Cease fire". Once we got across the Rhine, we were not to take a chance on our life. We'd been this far, we'd just about been through it; we knew it was going to be over pretty quick, so we were given orders to shoot everything except women, children, white flags, red crosses, or anybody that looked like they were really in distress. He hollered, "Cease fire" and when he did, everybody said well what's the General doing now? So, they finally got some binoculars to see what he was

1 looking at and it was the V2's on some flat cars. So we didn't actually capture them, but
2 we saved them to be captured and to me, this is the embryo of the space industry.
3 Once they were captured and brought them over here to White Sands, we had Bumper
4 1 through 6 down there at White Sands. I guess you're familiar with what happened at
5 White Sands with one of the missiles, not a Bumper. It kind of got loose and went into
6 Juarez.

7
8 Launius: Yes, they were talking about that this morning, Hermes.

9
10 Gray: You're familiar with that. So they decided, hey, let's don't shoot over land any
11 more, let's see if we can find some water. So that's why they started looking at the
12 Cape back in the early days.

13
14 Launius: Were you out at White Sands?

15
16 Gray: No, I was at the Anniston Ordnance Depot in Alabama. Three of us from the
17 Depot were sent to Banana River Naval Air Station because of our experience in the
18 field and handling chemicals.

19
20 Launius: When was that?

21
22 Gray: That was October 1, 1949. First thing, we had to find out where the Banana
23 River was and we finally found it south of Cocoa, south of Cocoa Beach you know, and
24 there were still wooden bridges across the river at that time. Funny thing about it, I think
25 there were about sixteen of us total down here. I was going to move in the second

1 house south of the Officer's Club, which was called Silver Beach at that time. So we
2 started to open the front door, well the front door fell off and the back door fell off. Go in
3 and look over and the commode had fallen over. One of the Navy guys finally came up
4 and he said, "Sir, you've got big problems." I said, "I sure have." He said, "Rapid
5 oxidation's got you." And from then on we knew it was rust!

6
7 Launius: Had these facilities been abandoned for a while?

8
9 Gray: Yes, the Navy was actually closing the Base. They moved out and just had
10 some caretakers here at the time. That's when they started the Long Range Proving
11 Ground and then the Joint Long Range Proving Ground, and so on. The first thing they
12 did was bring some V2's, they said "we're going to bring some V2's over here." So a
13 few of us, Lt. and myself, I was a civilian at the time. We went out to White Sands so
14 we'd learn all about the V2 missiles because we were going to be part of the crew to
15 launch, fire, and safe them. One of my main jobs was the safety of the launch pad and
16 the surrounding area, plus Fire Chief and anything else that came up. I think Liz did
17 the same thing - we all had about 7 jobs. And our job description, we were supposed to
18 have one, but it didn't work. We just took anything that happened.

19
20 Launius: What was your job title, do you recall?

21
22 Gray: My job title was Fire Chief and Emergency Services Officer. And that Emergency
23 Services Officer just encompassed anything and everything, like decontamination, EOD,
24 Ordinance Disposal, bringing it in, propellants, and one big thing that I kept worrying
25 about was losing any propellants in ground level or water contamination, but we got

1 around that by using stainless steel pans and the trough is still up there at Launch Pad
2 #3 that we had built. We had various pans because at that time the WAC Corporal was
3 one of our big problems.

4
5 Launius: Why was that?

6
7 Gray: The fuel that he used. He used red fuming nitric acid, which is very, very
8 corrosive. We hung sticks up all around the place with little ribbons on them.
9 Everybody watched when they were fueling that WAC Corporal what way the wind was
10 blowing because everybody had orders if anything happened, get upwind. You
11 definitely didn't want to be downwind on that "erfra", we called it red fuming nitric and
12 aniline. That is a hypergol fuel - you know what that is.

13
14 Launius: What would it do to you if you inhaled some of it?

15
16 Gray: Red fuming? If you inhaled a good whiff of it, I don't think you would last too
17 long. It would just, in a way, melt your lungs. It would cure a good cold real quick.

18
19 Launius: How did you end up as the Fire Chief and safety person? What background
20 led you in that direction?

21
22 Gray: Well, it really started off in London, England during '44. Some V2's had come
23 over and everybody pitched in over there to fight fires - I don't care who you were. So
24 we were in London one night and we happened to go to a nice dance hall and a couple
25 of these V2's started zooming in, you know. So we ended up fighting fires. That was

1 my first real taste of fire suppression, if you want to call it that and rescue work. You
2 know, the first thing with fire is rescue to protect people and structures around. And
3 then you start from there on. But you have to think quick and act quick.

4
5 Launius: Did you end up then doing that kind of work during the war?
6

7 Gray: No, during the war, I was chief of section artillery. We went through Africa fought
8 Rommel down there, and then we came in to Sicily and got that all cleaned up.

9 And then a few of our people went into Anzio via Italy and then back out and then we
10 went around to England and waited for the invasion there of Normandy. We went in
11 through Normandy and then through France and then Belgium, we were in the Battle of
12 the Bulge there. I guess you know about that; the cold weather, and where Hitler tried
13 to come back through and we finally suppressed him. But, there's one thing about the
14 Battle of the Bulge in the Hurtgen Forest people never understood and they don't know
15 it today, hardly. You did not dig foxholes in the forest because if you lay down, nine
16 times out of ten you'd be dead in the foxhole. You stood up by a tree. The reason for it
17 is when the shells came in and hit the top of the trees, they would airburst right above
18 your head. So standing up with a good helmet and keep your arms and everything
19 close to you, you had less of a chance of being hit. So we had to reverse our orders.
20 What everybody was trained through all those years to get down in those foxholes,
21 there you had to tell them to stand up and get next to a tree. So you got to out think
22 things as they go.

23
24 Launius: When did you muster out of the military?
25

1 Gray: June of '45. I was one of the first ones out in the state of Florida with high points.
2 I was out before the war with Japan was over with. When I went to Tampa where my
3 folks lived, I didn't know it then, but you had to sign up for the draft again.

4
5 Launius: Oh really, even though you had already served:

6
7 Gray: Really. I thought I was through. But come to find out, MacDill Field is in Tampa
8 and they called up and said "Hey, we need a few good men." So, I didn't too much like
9 that and I talked to my dad and he said, "Well, let's get a hold of the lawyer at the
10 company and see what he says." So the lawyer said I'd better do what they say, so I
11 went down to MacDill Field. The next thing I knew, I was on the Rescue Team down
12 there. And I could look around and I could see why. The people taking care of it were
13 in their 50's, 60's, and 70's, and they needed a bunch of young guys in there.

14
15 Launius: But, you were a civilian.

16
17 Gray: Yes, I was a civilian at that point. I'd had enough of the military at that time.

18
19 Launius: So, you started doing that kind of work?

20
21 Gray: Yes, I just kept going. Next thing I went up to Anniston Ordnance Depot and I
22 was up there for two years. You name it and we had it up there because they were
23 bringing all this stuff back from overseas; World War II. Chemicals, and we had to sort
24 that all out, what it was. I was in charge of a new area up there which had a lot of stuff
25 in it. And that's why the General of the Base said, "hey, go down to the Banana River

1 Naval Air Station since you know about chemicals. They're going to have something
2 there like that." He didn't know what was going on and I didn't either until I got here.
3

4 Launius: When did you come down here, '49, right?

5
6 Gray: Yes, '49, October 1.
7

8 Launius: What did you encounter, what was the place like? Did you have good
9 facilities; did you have a team with you that you brought in? Or did other people come
10 in?

11
12 Gray: No, there was nobody here. And the general public around here didn't care for
13 us too much. The Navy had been here and I guess they took a bunch of girls around to
14 different places.
15

16 Launius: Right, shore leave being what it is! How did you begin to create the facilities,
17 the equipment, the system, and the processes that you needed to maintain safety on
18 the Range?
19

20 Gray: Back then we had to use all World War II equipment. The first equipment we
21 started receiving was some old Navy crash emergency equipment. I'm talking about
22 trucks and the old asbestos suits which is totally condemned today, but back then, it's
23 the best thing we had. We finally found some decontaminating units. These were
24 wooden tank trucks. At that time we were using those up there at the Cape to
25 decontaminate and anything else on account of the propellants we were using. And

1 then we used to build the so-called blockhouse back in 1950 that was on a regular
2 concrete slab, 3/4 inch plywood with 30 pound felt on the outside and they painted it
3 aluminum to reflect the sun off as much as they could. And then I remember some of
4 the people having a hard time finding some big mirrors thick enough to build us a nice
5 telescope that we looked out over top of the sandbags that were stacked around it.
6 But, one thing I've got to tell you about that facility, it was not a protection thing, it was
7 just more of a shade protector and I think we would have been pretty well safe; I was in
8 the so-called communication shed at that time upon launch. If it had blown on the Pad,
9 we would have been pretty well safe but if it had got up 10 feet or higher in the air and
10 then blown, I don't think any of us would have been left in that so-called blockhouse
11 because the blast would have come down on top of us. On the Pad, it would have hit
12 the sandbags and bounced up over us more.

13
14 Launius: You said that you went out to White Sands to observe a V-2 launch and to
15 learn the practices that were in place out there, is that correct?

16
17 Gray: Yes. The main thing I wanted to know out there was the type of explosives they
18 used to destroy it in case they had to. And I wanted to know about the igniters, because
19 I knew it took three to four igniters in those engines at that time.

20
21 Launius: How did they do that? What kinds of explosives and how did they set it so
22 they could destroy it if they needed to?

23
24 Gray: They used a composition "C" explosive to destroy the missile if it got off range.
25 Back then you really had to hope it was working as there was really no way of testing

1 the stuff unless you blew the explosive we just didn't have enough of it to go ahead and
2 do the testing.

3

4 Launius: Where did you put the explosive?

5

6 Gray: It was strip along the side of the oxygen tank. You just ignite that and just split
7 the tank open. And once you did that, the oxygen took care of the rest of it real nice
8 because you had nothing but a big ball of flame at that time.

9

10 Launius: Do you know where the "Bumper" name came from?

11

12 Gray: Bumper came from, you take the V-2, and the WAC Corporal, set the WAC
13 Corporal down in the nose of the V-2; then once the missile got airborne and got up to
14 the proper altitude, the V-2 bumped the WAC Corporal off of the nose.

15

16 Launius: OK, that's good.

17

18 Gray: Do I get five cents for that?

19

20 Launius: That's the first time I've heard that particular part of the story. In terms of the
21 support staff for fire protection safety, how many people did you have working on this
22 Bumper stuff?

23

24 Gray: Let me tell you, you had groups of people, but everybody worked as a team. Job
25 descriptions, I don't think anybody really ever had one, you know. You had titles, but

1 everybody worked to help each other. We helped the fueling. We had military people
2 come in that were fueling. That was our biggest problem, the fueling. Getting the liquid
3 oxygen here. I think some of it had to come in from Tampa. And then the aniline and
4 red fuming nitric acid came in 32-gallon carboids. They were aluminum drums. And
5 those drums had to be hoisted up top with a so-called block and tackle.

6
7 Launius: So it was done by hand?

8
9 Gray: Done by hand. We had one old guy off to one side; we didn't know what he was
10 saying for a long time. He kept saying, "watch that tickle, watch that tickle." He meant
11 the block and tackle. He was so nervous, he was saying this. So, we finally figured out
12 his language he was talking. But to get it up there was really something. You had to
13 watch the wind and be sure your connections were good and be sure you didn't spill
14 any. Because if you did, you would have lost the whole top of the structure.

15
16 Launius: Did they bring these fuels in by truck or by water or some other method?

17
18 Gray: By truck. Tankers hauled it in. You know, the V-2 used alcohol.

19
20 Launius: Right. Was it hard to get things like liquid oxygen? Was that difficult to
21 obtain?

22
23 Gray: Yes, it was kind of a new thing and people just didn't have it too much. Yeah, I
24 think they got it in from Tampa. I think it was a company called Cordox Corporation that
25 hauled it in.

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Launius: What kind of fire fighting and emergency equipment did you have here during the Bumper launches? Just some basic trucks?

Gray: Just basic stuff that was left over from World War II. It was what the Navy left here. That's all we had. Actually, we had set up a launch pad up there more than people realized. We had fire suppression stuff on the launch pad, we had what we called monitor nozzles. I had two big monitor nozzles back on the corner and then we had a pad flush on Pad 3. And then we automatically turned that pad flush on upon launch to keep the concrete from spalling so much. Otherwise, the flame hitting the concrete would spall it.

Launius: Ok, describe that for me a little bit. You flooded the Pad?

Gray: We flooded the Pad. The Pad is on a slope. If you go up there and take a look at the top of the Pad, I'd say you look at it north from the Ocean, you'll see a big lip up there with tiny holes all along. We would turn that on, I'd say about a minute before launch to get the Pad all nice and flooded and that way it wouldn't spall their concrete too much. That's why you saw that trench down there; that stainless pan. We had to catch that because we weren't sure what fuels were dripping out of it.

Launius: I've seen the trench. Where did the trench go? Did it just spill off into the ground out there?

1 Gray: No, we had two big stainless steel pans out there. And, if we thought we spilled
2 one fuel, the guys pulled the cable that way, the pan would go that way, and then they'd
3 pull the cable this way over here. If you look at the bottom of the pan, there are wheels
4 sitting sideways. We had some aileron cable, which was aircraft cable, and they'd pull
5 that cable, according to what fuel we thought was spilling, to catch it because we sure
6 didn't want to get them together. That way, we kept them separated.

7
8 Launius: Where were you during the Bumper 8 launch?

9
10 Gray: I was right at the back door of the blockhouse. I was tied on to what we called
11 our communication system. Back then, we used what we called EE 8 phones. It was
12 the old Army-type crank phones. We used a bunch of those. And I think back at the
13 communications center, they did have the plug-in type phone stuff.

14
15 Launius: Switchboard. Do you know who else was in the blockhouse at that time
16 during the launch?

17
18 Gray: Yes, I think Tommy Mann was in there. He was the Base Commander at that
19 time. He was Eleventh Airborne Paratrooper Colonel. There was Fred Yanker. He was
20 a Major and he was our EOD Officer and a guy by the name of Bagneudo (sp?). I
21 always felt sorry for him.

22
23 Launius: Why, because of the name?

24
25 Gray: No, because of what happened.

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Launius: What happened?

Gray: Well, after the launch, he started running out of the blockhouse. I looked at him and he turned a flip in mid air. Back then we had these little plugins for the communications and these communication plugs would keep coming loose, so somebody came by and nailed these things all in the 2x4 and his was nailed in and hooked up, you know. And when he ran out, you've seen a dog at the end of a leash turn a flip? Well, that's what happened to the poor Colonel. And, he was so mad because he never did see it go!

Launius: Who was in overall charge at the Cape during this period, do you recall?

Gray: Yes, Tommy Mann.

Launius: He had total control, he was the Colonel?

Gray: Yeah, he was a light Colonel.

Launius: OK, telephone Colonel, as they used to say. How many people were out here working at that time, do you recall?

Gray: Well see, they'd bring a bunch of people in for fueling and launching and different things like that. I'd guess I'd say approximately 30 to 40 people. But then, a bunch of them would come in for launches and stuff like that.

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Launius: Obviously, you were out there at the time of the launch. Were you out there every day while they were preparing for it?

Gray: Yeah, I was out there for two weeks, straight. Actually, there are certain pictures around where you can see where it's a just at dusk picture, and there's a Third Infantry Division guy marching with a gun. If you look in the background, you can see a mosquito bar lying over there; the old World War II-type stuff. Well, that's me, that's where I'm laying. I slept right on the launch pad. You might have a copy of it. See, we had to get extra security down here. The Third Infantry Division would come down from Ft. Benning, Georgia to help us out.

Launius; Do you have any idea how many people?

Gray: I'd say about 25 or 30 would come down.

Launius: These were all MP's then?

Gray: Infantry.

Launius: They brought down the missiles, 7 and 8 and stored them over at Patrick, I guess. Do you know where over there?

1 Gray: Yeah, they stored them over where the NASA hangar is now. Do you know
2 where the NASA Hanger is? It was back in that area, there. That's one of the original
3 hangars and the old hangar 800 is an original.

4
5 Launius: And when they trotted 8 out and launched it, did they leave 7 in the hangar or
6 was it some place else?

7
8 Gray: They had it down there. Seven, when we tried to launch it, you know, it failed.
9 But we had to safe it, get it all down, drain it, dry it out, take it back to Patrick, redo it,
10 and re-valve it, and brought 8 up and started the process on 8. But, we stayed there for
11 two weeks straight; didn't even go home.

12
13 Launius: OK, so you just slept out there. They brought the food out to you?

14
15 Gray: Supposedly food, yes.

16
17 Launius: Well, Ed Belcher said he liked it!

18
19 Gray: Well, some of that was U rations, C rations. God, I'd been eating that for four
20 years overseas.

21
22 Launius: Do you have any idea how long it took to swap out 7 and 8 when they had to
23 make that change?

1 Gray: From when they had 7 on the pad there and took it back and brought 8 up, I'd
2 say about five days. See, we had to get more fuel over here; we had to get everything
3 right quick - change our whole system.

4
5 Launius: And, how many people did it take to launch the Bumper?

6
7 Gray: Well, you could have launched it with six or seven people. See, the Bumper, the
8 V-2 was set up as a tactical weapon. You know, the launcher came with the wagon, the
9 Mielarwagen, all that stuff came with it. Once they set it up, the launcher was there and
10 everything because it was set up to be programmed that way. So they were actually
11 using the German equipment that they had captured and brought over here. I don't
12 know if you know it, but one of the biggest things that we had trouble with was we
13 couldn't figure out the V-2's between the tanks and the skin of the missile itself, what
14 they used in there. That's where we come to find out that's where fiberglass came from.
15 That was the stuff between the tanks. It was a big mystery to our people what they
16 protected the outside skin of the missile and the propellant tank itself. And another
17 thing that might help you, you know the Germans had trouble with carbon vanes. Are
18 you familiar with that? The carbon vanes that are in the flame protect the vanes on the
19 outside from flopping around. Well, any little moisture and those carbon vanes split or
20 disintegrated. And, that's why the Germans lost a lot of missiles. You know, they lost
21 man per missile on average.

22
23 Launius: Were there any serious accidents during the launch of the Bumper? Was
24 anyone seriously injured?

1 Gray: No, just their physical and mental being. Otherwise, we were all right.

2
3 Launius: There's a note here that says typically July is very dangerous for fires. Were
4 you all especially concerned about brush fires at the time of the Bumper 8 launch?

5
6 Gray: Not too much, no. Actually, we were the only insurance company the
7 government had right up 'til today; the fire people and safety people because the
8 government is self-insured. And, I never could get it through anybody's mind that we
9 saved millions and millions of dollars a year on insurance premiums if you had to pay it,
10 so there's a big savings right there and somebody should bring that up - being self
11 insured. Because you insure the VAB, I bet you there'd be a million dollars a year just
12 empty, nothing in there.

13
14 Launius: Oh, I'm sure it would be more than that.

15
16 Gray: I'm just saying, just off the cuff.

17
18 Launius: That's a good point. So, self insurance is a savings because you guys are
19 there.

20
21 Gray: Terrific savings because the taxpayers are everything. Big factor. One of the
22 biggest.

23
24 Launius: There's a report that says that acid was spilled from Bumper 7 during its first
25 countdown. Do you recall that event? What happened?

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Gray: We cleaned it up right quick - no problem. We got it up so quick, it didn't even scar the Pad. That was the red fuming nitric, yeah.

Launius: So it just spilled out or did it spew into something?

Gray: No, the hose leaked. Once they fueled it, the hose wasn't properly capped and it leaked out a little bit that way. If too much of that leak out on any foreign matter, it would burst in flame. But, if you've got aniline with it, that's when it turns into what they call a hypergol. Then you get an explosive because that's exactly what the stuff is designed to do, to explode in the right place, controlled explosion, that gives you your thrust.

Launius: Are there any specific recollections from the Bumper project that you would like to share with us; anything funny, anything interesting, anything of significance 50 years after the fact that you can think of?

Gray: Going back 50 years, you're going way back. I don't think most of you guys are 50 years in this life. Yes, I think and I know it is the embryo of the Space Program, the V-2's. And, from there on we progressed along the V-2's, but let me go back a little bit and say for the first 10 years on the Cape, I was over there and I was assigned to Pan Am for 10 years and then back to NASA and I'm still with NASA which is the best government organization in the world, bar none. I'm a good volunteer. I retired in '84 though, and still there with them. But, the first 10 years I owned more missiles over on the Cape than anybody. You know, I actually owned them because anytime something

1 happened to one of them, they'd turn around to me and say, "It's all yours." [Laughter]
2 I even owned the Vanguard the first attempt to put the satellite up for the United States.

3
4 Launius: Were you there for the December 6, 1957 attempted launch?

5
6 Gray: I was. Bob Gray, I don't know if you know him. Dr. Gray was the Director.

7
8 Launius: I want to talk about that in just a minute. But anyway, let's go back and talk
9 just a little bit about the rest of your career. You were here about between 1950 and
10 1960, is that correct, running the safety service?

11
12 Gray: I was on the Cape from 1950 to 1963, directly on the Cape. From there I went to
13 NASA as the Fire Protection Officer. I was in on all the plans and even today we have
14 had no serious structure problems or anything like that still at the Kennedy Space
15 Center, for which we're very fortunate. I was assigned to Deke Slayton out at Edwards
16 Air Force Base and Palmdale. I was assigned to him as Orbiter Subsystems Manager
17 to bring the orbiters along. I got to tell you one funny thing, I'm just happening to
18 remember it. It's back when we had the Atlas. I was over on the Cape at that time and I
19 was sitting in my office and all of a sudden the dispatcher run into my office and he said,
20 "My God, we got a guy stuck in the missile." We had four or five launch pads going at
21 that time. I said, "Where is he?" He said, "I don't know, they just called and said, we
22 got a guy stuck in the missile." I said "Find out where he is first and let's find out what's
23 going on." And sure enough, they had an Atlas missile on the Pad and had taken a
24 plate off the side and lowered this guy down in the oxygen tank to do something down
25 inside there. Well, he got down in there, and it got hot and he swelled up. So

1 everybody's scratching their heads thinking, now what are we going to do with this guy,
2 how are we going to get him out? First thing, somebody says get the stuff and cut the
3 side of the missile out. We said hey, hold everything, good gosh, hold it. And so we got
4 a few of our heads together and we said, let's cool him down. So we dropped some
5 oxygen systems, hoses down to him to be sure he was alright. We took a little bit of
6 CO₂ and put some CO₂ down in there and we kind of cooled him down and pulled him
7 out. And, we never did get a medal for that, but we saved the missile, right there.

8
9 Launius: How many millions of dollars did you save them?

10
11 Gray: Millions! I think I brought a book, they wrote an article on it, "Unsung Heroes," or
12 something. It's a Popular Science, yeah.

13
14 Launius: That's a good story. In 1957, the Soviet Union launched Sputnik, the first
15 orbital spacecraft. Now we've been firing stuff out at the Cape here for all those years in
16 the interim. We hadn't put anything into orbit yet; came close on a few occasions.
17 There is a story, which I don't know if you know anything about, but if you do, please let
18 me know, that vonBraun had actually been commanded by the Army to make sure that
19 there was nothing in the upper stages of some of the Redstones so they would not go
20 into orbit. Have you heard that or do you know anything about it?

21
22 Gray: I do know about it, yes. They actually had it down here and told to get it back in
23 the building. I don't know if they were told to get it off base or not. But the Vanguard was
24 to be the first one. The Vanguard was under the Navy program at that time. And Bob
25 Gray was the Director of that program. And I think that everybody knows that the

1 attempt to launch failed. But, when it did fail, it toppled over, the satellite wasn't
2 damaged too much. It went over to one side; the satellite was only about so big. It
3 kind of split open, the inside kind of fell out, so we put it back inside and popped it back
4 together. Many people when they saw it said it wasn't even damaged. They didn't
5 know it split open.

6
7 Launius: Let's talk about that first attempted Vanguard launch in December of '57. It was
8 a spectacular explosion. I've seen video of it or footage of it. And apparently this was
9 done with a great deal of public fanfare. The media was here to record it. What Pad did
10 they use; where did you put the spectators, and how did you assure safety on the Pad?

11
12 Gray: Well, we had good blockhouses back then. The glass was 6 inches thick in the
13 blockhouse you was looking out through. So, we were pretty well safe at the
14 blockhouse, and everybody cleared the Pad, oh back I'd say a couple, three thousand
15 feet sometimes. The press was way back. They had cleared enough palmettos out so
16 the press could get good pictures back there. But, I wish you wouldn't say that was a
17 spectacular fire because we could do it some other way besides using million dollar
18 missiles to build a bonfire.

19
20 Launius: Well, nobody intended it that way, but it was a fairly significant failure
21 unfortunately, because the media, as you know, just had a field day with it. Soviets
22 could do all the stuff right and we couldn't seem to do anything right at the time.

23
24 Gray: I'll tell you, one thing I remember vaguely that really sticks in my mind, we were
25 on the launch pad one night getting ready to launch one of the missiles, I'm not sure, I

1 think it was Redstone. But all of a sudden, we got the order to hold up. And everybody
2 said, well what's the holdup? Sputnik was going by. They didn't want to get them too
3 close in case they did put something up there. But, I remember that.

4
5 Launius: Could you see anything up there, by the way? Did anybody ever see
6 Sputnik?

7
8 Gray: I don't think so. It was too small.

9
10 Launius: That was my thought.

11
12 Gray: I think Sputnik was only about maybe 11 inches with a few fins in back of it.

13
14 Launius: Did you meet Wehner vonBraun early on? Did he ever come down here?

15
16 Gray: Yes

17
18 Launius: What was he like?

19
20 Gray: He was one of the Germans; he was alright. Yeah, he was pretty good. I just
21 had a funny feeling, you know. Here you are over there fighting one another and I keep
22 wanting to know who's on what side sometimes. But, I'd say it's a good thing we did get
23 vonBraun and Debus and all that bunch because they continued on with our space
24 program. They knew exactly what they'd been through and everything. And you got to
25 really hand it to them in a way; the stuff they'd been through was under wartime

1 conditions. Under conditions that we would never see over here. I hope we never see
2 it.

3
4 Launius: When did Debus come down, do you recall?

5
6 Gray: Debus came down, it seems to me he came down in late '51 or '52.

7
8 Launius: Was he here pretty much all the time or did he come back and forth?

9
10 Gray: Back and forth sometimes. But, he lived at Patrick at first; they put him in a
11 house down there. I guess you really sort of had to watch for him in a way. He was
12 speaking broken English. I don't know if you know, but vonBraun's brother was the only
13 one who could speak English when they were captured.

14
15 Launius: During the early years in the 50's and early 60's, NASA gets created in 1958.
16 What was the reaction around here about the creation of this new civilian space
17 agency? Was everybody excited about it or was it just kind of business as usual, or
18 what?

19
20 Gray: It was business as usual, but people wondered, you know, NASA - even that
21 word, and then you had to explain to them what NASA meant, you know - National
22 Aeronautics and Space Administration. And it created a complete, brand new
23 government agency to launch missiles. And, I would tell them it's not only to launch
24 missiles, but it's to look into what we have out there in our universe. I said, they are the
25 people who are going to do it. A lot of people were asking me questions because they

1 knew I was tangled up at the Base here in all ways. I kept saying, you know we're not
2 the only pebble on the beach. We call our Earth a satellite, and I said we're all
3 astronauts, but nobody believes it. We're all out here with everything else. So we've all
4 got to get together and work this system. I think one of the biggest systems we've got to
5 work, I mean if you want to look at the future, I hope the future is still out there for us all,
6 is meteorites. To me it's a big factor, because I've been to some of these places, I think
7 out there in Arizona where that one hit and if you just look at the crater that must have
8 been a small one compared to what could happen. To me, we've got the know how
9 today to get up there and hook a so called ramjet engine on one of them and boost it
10 another direction instead of coming our way if it really starts this way. We're all involved
11 in it regardless of how you look at it, worldwide, all countries, all people.

12
13 Launius: Was there a sense in the 1950's here that what was taking place was really
14 significant, that you all were opening the door to the universe, that in a very short time
15 we were going to journey to other places like the Moon or Mars? Was there any sense
16 that this was something that was underway?

17
18 Gray: I think it was at certain levels of engineering groups and people and doctorate
19 areas. That feeling was there, but when it worked down to us, you know, well we
20 worked from day to day, month to month, year to year of what the programs were and
21 how they worked and try to keep up with it. Otherwise, I don't think it was down to the
22 level of ordinary people of just what was going to take place here. I just don't think we
23 could see it back then.

1 Launius: Ok, that's very important. In 1959 they appointed the first astronauts and
2 then, of course, the manned program, Mercury, got underway with the first launch of
3 Alan Shepherd. Was there a sense of excitement about those flights as opposed to the
4 ones that were not manned?

5
6 Gray: Oh, yes. When they appointed the original seven astronauts, and they would
7 come down here, we had some pretty good parties with them. Well, let me say we had
8 some super good parties. I knew all the seven originals and bummed with them.
9 When Gordo Cooper took the 22 orbits, I talked to him just before he left and I said,
10 "Gordo, when you make it and you'll be back, we'll make you some popcorn like you
11 want and we're going to have a hell of a party for you. I think there's a picture of me
12 somewhere talking to him about this.

13
14 Launius: Let me ask you a couple of questions about the Mercury 7. They captured the
15 American imagination like no astronauts have since, right up to today. When John
16 Glenn flew in '98, we had a throwback to that early excitement one more time it seemed.
17 What was it about those guys that was so exciting? Do you have any idea, any sense
18 of that?

19
20 Gray: Yes, I sure do. One thing about the guys, they were all first-class American
21 guys. They were all good looking guys, what you call clean cut. The women really liked
22 it. And our good friend, Jim Rathmann down here, a Chevrolet dealer, happened to
23 have some Corvettes sitting around at that time, so he gave each one of them a nice
24 Corvette.

1 Launius: Did he give them to them, or did he sell them?

2
3 Gray: I'm not sure, but they had them. They would stop at the Mouse Trap and other
4 different places around and have a good time. And when they walked in everything
5 would stop and then start going again once they got settled.

6
7 Launius: Were they down here a lot?

8
9 Gray: Quite a bit. There were here a lot of times when the people didn't know it. They
10 had to be because they had to get certain things done and if the people knew it, they
11 just couldn't move. And even people on the Base didn't know they were down here a lot
12 of times. I would have some of them come over to the Fire Station when I was there. I
13 had a big Fire Station around the corner and it's still there today. They would come over
14 and eat in the kitchen. They had a Navy doctor at that time and he would call me up
15 and chew me out. He'd say, "Darn it, you're putting too many pounds on these guys!
16 Feed them something different." So, they finally had to stop coming over there to eat.

17
18 Gray: Incidentally, Steve Talley will be here on the 28th from the Learning Channel. I
19 don't know if you knew about that. He'll be up on Pad 3. I told him to call Ken Warren,
20 Air Force, to be sure everything is worked out with them. There's one other thing, Scott
21 Andrews must have about 3 hours of video up on Pad 3. He called me from L.A. and
22 said he's with the Learning Channel and would we please help him out and enlighten
23 people on what's going on in the space industry.

24
25 Launius: Stan had a couple of questions about Bumper, specifically.

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Stan Starr: You said that you were in the communications shed during the launch of Bumper.

Gray: What I so called the communications shed was what people call the blockhouse today. It actually wasn't a blockhouse; it was more communications in there than anything else, so some of us called it communications, but most call it the blockhouse. That was our sole place that we did control the missile from. That's the one that had the periscope mirrors on it.

Starr: Ok, so that's where you were. And you've already said who was in there.

Gray: Yes, I'm not sure who all was in there, but there were about six, eight, nine, ten people in there. And those people that you see in this picture that you see all the time with photographers standing up there; there's a Navy Lieutenant there and the rest are all civilian photographers. They all knew they were there on their own. They had signed a piece of paper that they were on their own on top of that abutment.

Starr: Was VonBraun or any of the other Germans down for any of the Bumper launches, do you know?

Gray: No, they had just come through there. Pappy White was the head guy from General Electric. He was actually the Civilian Director at that time. And, there was a guy by the name of Eppert. He was the civilian contractor that really put everything together there; the launch pad, the water system, and all that good stuff.

1

2 Starr: One of the things that we saw in the aerial photograph of the Cape was a stripe
3 cut down through the vegetation along the ground track that the V-2 took. This is an
4 aerial shot taken a few years later, but it's right in line with the blockhouse, here's
5 Complex 3 and it's cut down through the vegetation.

6

7 Gray: A lot of these stripes that you see in these photos are engineering data things for
8 boar siting. That's what those stripes are for. And then, at the same time, they laid
9 communications cable down through these places.

10

11 Starr: We were wondering if it was to give fire-fighting access should a missile come
12 down near that track somewhere.

13

14 Gray: No, it had nothing to do with it.

15

16 Starr: Another thing was, in looking at the pictures from the '50's, the vegetation at the
17 Cape is mostly low-level, real small vegetation and these days it's built up real thick, a
18 lot of the shrubbery is real thick and there are some places where they've been cutting it
19 back down and burning it out. Is that because your group controlled fires and kept the
20 fires down and the vegetation grew thicker, do you think? Do you have any thoughts on
21 that?

22

23 Gray: Yes, you've got a bunch of what they call scrub oak over on the Cape side and
24 that just progressed with the years. The scrub oaks weren't there when we first moved
25 in, but it's just progressed that way.

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Starr: But, you didn't have a program of periodically burning off the ground and that sort of thing, did you?

Gray: No. Later on we had a program of sectionalizing, like you see these lines here. We did that later on, but if you really got a good fire going, it would jump it.

Starr: Then, those sections were to control fires?

Gray; Yes.

Starr: Do you have any other recollections of Dr. Debus? You mentioned him a little while ago and he's one of the people we're real interested in gathering more knowledge of.

Gray: He was called a number one director, to start with. He was interested in people, in everybody. And, he wanted the programs all to go correct and no injuries in any way, shape, or form. That's why they really started what you call the missile program in safety because safety in the missile field is completely different than anything on the outside on account of your propellants, your ordinance because your bringing a weapon together that is really potential and you've got to have those type of propellants and explosives to go along with it; that is your propulsion systems. The more explosives you can get, the better off you are and able to control it.

1 Starr: So, he impressed you as being a very people-oriented person. More so than a
2 technical engineer-type person.

3
4 Gray: Yes. I talked to him many a time. Kind of a funny thing, when they were building
5 the NASA KSC Headquarters where the Center Director is now, I got a call one day. I
6 think my office was on the third floor at that time. I had to go up there and I had to
7 condemn the whole top floor. They had put some nice plywood in there, beautiful stuff,
8 and some of the contractors were in there using lacquer thinner wiping it down, cleaning
9 it. One little spark and we would have lost the top of the building up there. So, we had
10 to open all the windows, cut down the air conditioners. We told him about it, and he
11 said, "take care of me."

12
13 Starr: Do you recall if Debus had a bodyguard?

14
15 Gray: No, not really. Have you all heard that? There was always somebody with him,
16 and I think people with him would kind of look out for him. We could understand him
17 and a lot of other people couldn't.

18
19 Starr: There was one other feature in the Pad area. There is a little concrete block-type
20 building to the west and it has what looks like a fuel tank there. Is that where the diesel-
21 powered water pumps you talked about were situated that pumped the water to the fire
22 control system for the Pad?

23
24 Gray: I don't know. Have you got something I can look at?

25

1 Starr: I think you had said there were two 1000 gallon per minute diesel-powered
2 pumps.

3
4 Gray: I think that was what we called our potable water system at that time.

5
6 Starr: So, you had firewater and potable water?

7
8 Gray: That's what that was, yeah, from what I can remember.

9
10 Starr: Do you know where the potable water came in from?

11
12 Gray: Artesian wells and then they aerated it, you just had to get over the smell of it.
13 So a lot of people you'd see them first come up and drink sulfur water, they'd hold their
14 nose. It's good for you. The people living on the beach at that time lived on it.

15
16 Starr: We also heard somewhere along the way that one of the houses that's there to
17 the north of the pad on the beach contained your office or something like that for awhile.

18
19 Gray: Yes, there were seven houses along the beach, north of launch pad 3. The first
20 house belonged to a woman by the name of Mona Martin and then they moved me into
21 the next house because I was one of the few people who talked to her. And then on up
22 were the communications people, and then I think about the fourth house up was
23 Colonel Tommy Mann. He was the Base Commander at that time. This Mona Martin
24 was really nice. We thought she was down and out. We didn't know she had anything.
25 We would even bring her some food in. She had an old Packard. Some of the guys

1 would kind of help fix it up for her, you know. We didn't know she'd gotten in that old
2 Packard, drove it to Merritt Island, and gotten a new Cadillac, we found out later on.
3 Her husband was a Representative from the state of Pennsylvania, and we didn't know
4 that. The reason she was so upset about her house, it was shipped in from England.
5 Each block had England marked on it when they started tearing it down and what I
6 remember of the tile, it had Belgium marked on each tile on her roof. She is the one
7 that had said, "if anyone messes with me, I'll pull my shotgun." Well, she did have a
8 shotgun, but it was a double barrel and I was one of the fortunate ones to know that she
9 had plugs in it, but when the federal judge Barker came up to tell her she had to move,
10 she pulled her shotgun, you know. Boy, the GI's everybody hiding under the jeeps, they
11 were all over the place. I was the only one that stood up and walked up to her, you
12 know. I said "Miss Mona, let me borrow that gun from you for awhile."

13
14 Starr: Before the Bumper launches, did you have to go notify those folks to leave?

15
16 Gray: Yes, they had to leave. They gave them a motel uptown. She was the only one
17 that kind of, well, she wanted to fuss, no matter what it was. Nobody else to talk to, I
18 guess.

19
20 Starr: Did you say there were just a few people living out there?

21
22 Gray: That's right, just a very few people. But, one thing, I don't know if people know it,
23 do you remember when those black people were killed, their house was blown up in
24 Mims?

25

1 Starr: Oh, the civil rights activists?

2
3 Gray: I forget their names, but a man and woman were killed there. Well, we did some
4 testing for the FBI with some old houses on the Cape to try to simulate what happened
5 to those houses up. What type of explosives were used, how much damage was done.
6 So, we used about three or four of the old houses that we had on the Cape to do this
7 testing on. I don't know if this has ever been brought up before, but I was right in the
8 middle of all this to find out what went on. But the houses were put to a good use even
9 if they were blown up, to see if we could find out how it was done and what caused it.

10
11 Starr: There is a road coming up from the south to the lighthouse that came from the
12 Canaveral-Cocoa Beach area and then right at the Bumper Pad, there was a road
13 headed west. Where did that road go? You know, toward what is now the industrial
14 area on the Cape.

15
16 Gray: That's going back to a control area. You know where central control is now at the
17 Cape? Ok, that was up toward that area there for future stuff. And if you look at this
18 pond right here, this was our fire suppression pond, we called it. Here is the pump
19 house sitting here, if you can see that. And, I think this is the launch pad right here.
20 And this road back up here is where we had the beach houses along here. And I was in
21 about the second house here at that time.

22
23 Lori Walters: Going back to the Bumper times. Individuals that worked out there, were
24 they outwardly complaining about the conditions; about the heat, the humidity,
25 mosquitoes, or were these just casual comments. Was it a large amount of criticism?

1
2 Gray: No, they were just casual. Most of us, what we'd been through, WW II guys, this
3 was a cream puff. Mosquitoes didn't bother us too much, we coped with that, and the
4 main thing was that nobody was shooting at us here, we hoped. We just coped with it.
5 If C rations came in that day, it was C rations. We lived on them for years, you know,
6 we existed on them. I remember some K rations coming in. I don't know if you know
7 what K rations were. They looked like little Cracker Jack boxes. When you were really
8 in combat, that's all you had to eat. And then there was a D ration, which was a
9 chocolate bar only. And all the French people, the girls liked our D rations.

10
11 Walters: You weren't married when you came to the area, correct?

12
13 Gray: I was married.

14
15 Walters: You were married. What were your wife's first impressions when she arrived
16 here?

17
18 Gray: Well, at that time the Navy had two areas away from Banana River. One was in
19 Eau Gallie and the other was in Cocoa. The Navy had houses back up there.
20 Incidentally, those houses are still in place today, and people are living in them. I
21 moved back to the one in Eau Gallie, which is Melbourne today. My wife said, "I've had
22 enough." So, she went back to Tampa and stayed with her folks until we got things
23 settled down over here. It was rough, there were no stores for shopping, and we still
24 had sulfur water over here. That's what was getting her more than anything.

1 Walters: In the mid to late 1950's did you notice if there was a lot of after hours
2 interaction between Pad support workers and the actual missile technicians or did they
3 have two distinct societies that they operated in?
4

5 Gray: There were two different distinct groups - your managers group and your worker
6 group, if you want to call it that. And then you had your construction contractor group
7 here, which is a big thing. At the same time most of this was going on, they were
8 building the Port up there, the harbor. And there were a bunch of those people around
9 here at that time. Money was sort of free flowing and everything else. But, I think
10 people could see what the makeup and buildup was around here. Incidentally, I bought
11 my house in 1950 and I've still got it and it's fully paid for. I got it under the GI bill. At
12 that time it was 4%. Unheard of.
13

14 Launius: Just a couple more questions. When you started flying the astronauts, was
15 there a change in the way you approached the safety issues associated with the flights
16 and what were those changes?
17

18 Gray: Definitely. There was a big change in the way we handled missiles and
19 everything; propellants and all the works. Because you had to think of an individual or
20 individuals, you had to think of life on the big stick, as we used to call it, when you're
21 sitting on top of that thing. Especially the first one we had with Al Shepherd. Boy, if
22 they could have got that count going, but you now he had to lay up there in that thing
23 another hour or two or something like that, cramped in that thing and it's like being in a,
24 well take the size of a washing machine, getting down inside that thing with your head
25 sticking out or a dryer; that was about the size of it. And especially in that suit, we all

1 felt for him. Everybody was talking to him. I don't know if he really went to sleep or not,
2 but I thought I heard some snoring one time. I don't know if you know, but one of the
3 first missiles, just before he went aboard, we had a Redstone lift off about an inch off
4 the deck and sit back down. Well, it disconnected everything and it was just as though
5 the missile was in flight, and then all of a sudden after just a few minutes, the launch
6 escape system kicked off. The actual missile worked just like it was in flight, but it was
7 sitting on the launch pad. So, we had to sit with that thing all day and all night until it
8 bled down. You just had to let it sit there. That was the first thing before Al's flight so
9 we had to look at all that stuff. Something you put in the back of your mind about it.
10 And everybody, in their own individual way, you could tell by looking at them once that
11 thing ignited, they all kind of had a little prayer they said to themselves or something,
12 you know. Let it go right.

13
14 Launius: Did the Mercury 7 especially, obviously later astronauts are in the same
15 category, but did they give any of you all a sense that they were apprehensive about
16 this; getting on the top of a big explosive, essentially?

17
18 Gray: No, I never did see that. All the astronauts back then were guys that tested
19 flights on aircraft and all types of stuff so they had the same sense that this here was
20 testing aircraft. But none of them were apprehensive in any way, shape, or form as far
21 as I could see. Boy, they were all willing to go. Sometimes we used to call them the
22 "go gang" because they'd go for anything.

1 Launius: What did you all think when you heard about John Kennedy standing up in
2 1961 and saying we're going to go to the moon by the end of the decade? What was
3 the reaction down here? Did anybody think about it or did you talk about it?
4

5 Gray: We all thought about it, we talked about it and we dreamed about it, and
6 everybody was truly excited about it. They said this was one of the things they were
7 looking for. And then the big thing was landing on the moon and safely returning to
8 earth. That was the big factor. Gosh, you get them there and then you didn't have a
9 redundant system when you lifted back off of that moon. You had that one engine and if
10 it didn't work, too many people never thought of it, but we always thought of that. I think
11 when they did land, the Apollo 11, they only had about 17 seconds of fuel left. People
12 didn't know that.
13

14 Launius: Would you be willing to comment about the Apollo fire. Where were you when
15 you heard about that? Were you here at the Cape at that point?
16

17 Gray: That was a non-hazardous test you're talking about. I was at the Officer's Club. It
18 was on a Friday night and all of a sudden the manager or the secretary ran in and
19 tapped me on the shoulder and said "my God, we've had a bad accident at the Cape."
20 When I got up and made a telephone call, I walked out of the Officer's Club, got in my
21 car; I didn't even think of my wife or anybody I was with, and headed for the Cape.
22 They never did know where I went or what happened until rumors started getting
23 around.
24

25 Launius: How long did it take for the rumors to get around, pretty quick?

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Gray: Pretty quick. See, one problem with that was the door opened in. It didn't open out and that door weighed 97 pounds. You take your three flight people in there; one, two, and three; the center guy had to operate that door. He had to reach back over the door, lift it, turn it, and then set it back down. Just about an impossibility to ever get out of that thing.

Launius: What about the moon launch in 1969? Was there anything in particular about that that you care to comment on? That was kind of the culmination of this great adventure that began in the early '60's.

Gray: Well, you know there were so many parts of that Saturn that had to work perfectly right down to the second - the lift off, the separation of all your different stages, and then ejecting and going around the moon orbit. Yeah, it was a big thing; everybody thinking all that time until they actually returned back to earth and we did see them. It was a big thing all the time, everybody thought of it. And everyday we went to work, we had meetings on it and stuff, you know, how's this going and how's that going and how much fuel have they got left, and different things like that. We got all that data back from them.

Launius: We've come a long way in 50 space years, from the first Bumper launch all the way to going to the moon and now the shuttle operates pretty regularly, it seems, almost routine at this point. It's not, obviously. Any parting comments you would like to make about that period when you were here or what you think might take place in the future? Anything along those lines that strikes you?

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Gray: Well, I say that they definitely should keep going with it and we should go to other celestial bodies because I keep thinking there's something else out there besides us. To me, we're not the only living thing in the celestial world out there. We've got to find out what's going on out there. I think we should go to Mars and different places like that for our own good and the good of other people of the world.

Launius: Any other parting comments?

Walters: After Apollo 11, you start to see a lot of budgetary cuts within NASA and the space program in general, did you notice a change in the community over here; a sense maybe that this may all dry up and go away?

Gray: No, the whole community here was involved in the space program in some way or another. Even if they didn't work out there, they felt they were part of it. And, truly they were part of it. I kept telling them, "You're part of the system, because you're a tax payer. You keep us going." Once you tell people like that that they're part of it, they accept a lot of it. I think we all worked as a team. The whole system here is that way.

Walters: And so as we're starting to see budgetary cuts in the early '70's, the community is just pulling it's belt a little tighter and going along with it?

Gray: Yes. I think all government programs are like that at times regardless what government agency it is, people have to take upon their belts at different times of the

1 system and then we just hope there is nothing we have to expend emergency systems
2 on like a war or something.

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4 Launius: Thank you very much. Do you have anything else you would like to add on
5 anything at all?

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7 Gray: Well, I would like for the space industry to continue on. I think one thing that
8 we've got to look at though. We can't be turning this space stuff over to too many
9 outsiders. We've got to keep it in our own back pocket. Just keep going with it,
10 because that's what we need. I'll be there to support you - I'm a good taxpayer.

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12 Launius: Thank you very much.

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