

Mr. Dave King
Oral History
Kennedy Space Center
Held on October 16, 2002

Interviewer: Lisa Malone
Associate Director,
External Relations and
Business Development

Smaller font

Global or launch director

*To Elaine
10/18/04*

Transcriptionist: Sharon Youngquist

Date of Interview: October 16, 2002

1 Lisa Malone: Ok. Ok, today we're here as part of the KSC Oral History Interview Project.
2 We're at the NASA Headquarters building. Today is October the 16th, 2002 and today we're
3 interviewing Dave King who is the outgoing director of Shuttle Processing here at KSC. Dave would
4 you state your full name and birth date?

5
6 Dave King: My name is David A. King. I was born on October 29th of 1961.

7
8 Malone: Ok. And where were you born and where did you grow up and what were your
9 parent's occupations.

10
11 King: I was born in Anderson, Indiana while my dad was going to college, moved back to
12 their home state of Sumter, South Carolina in 1963 so I was only in Indiana a couple of years. My
13 mother and father were both, both worked. My dad was, ended up being a manager of personnel of
14 a telephone company there, General Telephone. He was a regional manager for General
15 Telephone in Sumter, South Carolina and my mother retired as a personnel manager for a clothing
16 manufacturer that was there in Sumter, Carolina.

17
18 Malone: Ok. And then as a child, an adolescent, did you build model airplanes or rockets or
19 have an interest in space or planets.

20
21 King: Well you know, the moon landings occurred at a pretty interesting time in my life. I
22 was pretty young at that point and, it caught my interest when I saw folks, men walking on the moon
23 and I remember, my mom coming in and telling me, ok, it's time for you to stop watching the news

1 and trying to get any information that you can on the moon landings. I built some airplanes and, and
2 I always had a general interest in aviation, but I never, it was never really a passion until I got into
3 college and started studying engineering and then I got very interested in aviation and aerospace
4 and came to work here, pretty much straight out of college. I worked for a small engineering
5 company in Columbia, South Carolina for a couple of months. Got the offer from NASA here at
6 Kennedy and went into my, I remember going into my boss and telling him I had an offer from NASA
7 and he said, well you really don't have much of a decision here, so. And came to work down here
8 immediately thereafter.

9
10 Malone: Ok. And in '83 you earned a Bachelor of Science Degree in Mechanical Engineering
11 from the University of South Carolina. Why did you choose that school and that major? Did you
12 have any encouragement to choose that school or that major from anyone in particular who might
13 have been a mentor?

14
15 King: I grew up in Sumter, South Carolina. There was a branch campus there, so going to
16 school, I went to school my first two years ^gat the Sumter campus of the University of South
17 Carolina. I chose engineering because I was always interested, I always did well in math, it came
18 easy for me and I was very interested in the science aspects ^gof what you could do through
19 engineering. I then went to Columbia campus for my final two years of my bachelor's education. I
20 always, I grew up a Gamecock, I guess I'll say it that way. I grew up in South Carolina, I grew up a
21 Gamecock, and I always wanted to go there from the time I was very small. Several members of my
22 family also went to the university.

1 Malone: Ok. What were your feelings and experiences of the first launch back in 1981 for the
2 Space Shuttle?

3
4 King: I can tell you that in 1981 I was actually in my dorm room watching the Space Shuttle
5 launch on TV. We had a party to celebrate it in one of the conference rooms there in our dorm room
6 and I can remember it being just enormously satisfying thing to happen even though I wasn't a part
7 of it at the time. I can remember thinking, what an accomplishment by a huge and I had no idea at
8 the time how many people were involved in making that a success, but I was just amazed that the
9 engineering marvel of something like that occurring, and I remember thinking, wow, the folks who
10 work on that must really be sharp folks and they must have an incredible team to be able to pull that
11 off. It was just an incredible thing to even conceive of happening.

12
13 Malone: Yeah, I remember I was in my dorm room watching a teeny TV set for STS-1 thinking,
14 oh, how exciting, and I never thought I'd be part of it. Did you ever think at that moment you'd be
15 part of the team?

16
17 King: You know, I really didn't think that I would be a part of it at that point. I just remember
18 thinking, wow, what an accomplishment and I wouldn't, I never thought that until I got out of school
19 and then had the opportunity to interview down here. At that point, I guess it became a little more
20 reality, but never thought about it as being a real possibility when I was watching it occur for the first
21 time.

22

1 Malone: Ok. You came to KSC as a main propulsion system engineer in 1983. What led you
2 into that particular department and what were your initial impressions of KSC and the people when
3 you came here NASA?
4

5 King: I actually got an interview through a friend of mine who came to work down here,
6 Ralph Roe, who was also a launch director and worked with him for many years since. I went to
7 school with Ralph. He got a job down here before I did, got me an interview. It's kind of an
8 interesting story, I actually interviewed on my lunch break on a pay phone down the road from the
9 office building that I was working in at the time, right beside an interstate. And you could here the
10 trucks going by, I'm sure. Interviewed for the job over the phone and I remember thinking at that
11 time, boy, I know these guys think I'm just a real hick and I'll never get this job, but turns out it did
12 happen anyway. But, it was an amazing thing the way that all that transpired. You know, I'm a
13 believer in fate and I believe that God had a hand in all of that and I'm just amazed that it all
14 transpired the way it did and came together. Main propulsion just happened to be the place where
15 there was an opening at the time. I was always very interested in the fluid side of engineering field X
16 anyway, and so it seemed to be a real fit. And I worked in main propulsion for six years, main
17 engines, and what an incredible place to start. It's a very, very high energy system and gave me a
18 really great background, worked with a lot of very, very sharp people. It's amazing. You can work in
19 a system your whole life, like that, and not understand it all, it's so complex. And, I was just really
20 taken by the talent by the folks that worked those systems and made them work so well.
21

22 Malone: Did you have any particular heroes in space flight in the United States effort, say, do
23 you have anything you might want to relate about that?

1

2 King: You know, I guess I felt that same way about astronauts that everybody does. You
3 always look at them as heroes, as putting their life on the line so that others can be bettered by it
4 and always looked at them that way. Neil Armstrong held a very special spot in my heart, because
5 not only did he walk on the moon, but he got to hit a golf ball on the moon, [Alan Shepard hit golf
6 ball] too. So, those things kind of were, rang true anyway with me when, when you talk about
7 heroes in space.

8

9 Malone: Ok. In January of 1986 the tragic Challenger accident took place. Could you relate
10 your experiences about that accident, maybe where you happened to be and. . . ?

11

12 King: I had only been here a little over a year at the time. I was not in the firing room for that
13 particular launch. I was actually in a different firing room testing a different vehicle. We took a
14 break from that to walk outside. I walked out on the stairwell on the outside of the Launch Control
15 Center and saw it occur. And I can just tell you that it took a long time for me to accept what had
16 happened. It was a very tragic thing. It was a very sad thing. And it was very difficult, it's one of
17 those defining moments in my life when it took, I realize how long it took for that to really sink in as
18 to what happened that day. You know, I think that we have done a lot of great things since then and
19 I believe that that was a real changing point for much of what we do in the Shuttle Program and I
20 think that we are much, much better and much, much safer as a result of all of the things that were
21 done in the following days. I remember, for the next couple of years, I spent doing reviews and
22 requirements reviews and changing the way we did things to be more rigorous and those were
23 some pretty defining moments in, in my career and in the culture of how we do things here. So, it

1 was a part of what we are today and we don't walk away from that. We hold fast to that and know
2 full well that that's a part of our history and part of our makeup today.

3
4 Malone: I think it may have changed the way we look at, at the risk involved in launching
5 Shuttles.

6
7 King: I don't think there's any doubt that it does that, it did that. I don't think the public had
8 an understanding and I think even internal to the program, I think we may not have understood the
9 full depth of the risk that we assume every, everyday. I think we have a lot more healthy posture in
10 that today in being able to deal with that, but it really was a defining moment in my life.

11
12 Malone: What did your work as Space Shuttle Discovery Flow Director involve and do you have
13 any particular insights or lessons that you'd like to share either with respect to the job or KSC or
14 working with the program.

15
16 King: I can tell you that that's got to be one of the best jobs here. Flow Director was just an
17 opportunity to be the final integrator for everything that goes on down here to get the vehicles ready
18 to go fly. You don't have all of the administrative burden, but you have all of the ability to go get
19 resources and do the things that you need to do to get the job done and to integrate all of the issues
20 and resolve all of the issues that come up. It's an incredibly fun job. Not as much technical as it
21 was operational in getting teams together, getting people to work together to resolve issues in a way
22 that would be, you know, positive. And it was just a great opportunity to build a team, to be able to
23 accomplish what I still believe is an incredible goal and it was a super opportunity for me personally

1 to grow and to learn, but also, to be able to have such a tangible result of what you worked so hard
2 to do ~~in the, in, when I'm,~~^{steps} and I'm talking about launching. There are not a lot of jobs in this world X
3 that are that way. And that was one that was incredibly rewarding.

4
5 Malone: One of the things that struck me about that particular job is you get to work with entire
6 team across the contractor world[✓] and Houston and there's a lot of camaraderie within[✓] that part of
7 the job in itself.

8
9 King: There's no doubt about that. There, having to bring all that together and having to
10 resolve all those issues, and having that burden be on you is a great feeling and a great thing to go
11 do and it's just amazing, you don't realize how many people it takes to do their job just perfectly to
12 make one of these things work and that is what I look, but when I look back and reflect on what that
13 job was about that's what I think about.

14
15 Malone: And you were named launch director in 1997. What are the pressures like before X
16 launch? If you could describe that and if you have any particular launch that seemed especially
17 difficult and why was that or was one particularly smooth and why was that?

18
19 King: Boy, launch director, I keep saying this, but launch director has to be the best job out X
20 here. It is[✓] even more fulfilling I think, but it can be very, very stressful as well. I always found it to
21 not be so bad, because you have full knowledge that all the right people are in all the right places
22 and you know who to call when you've got problems. I'm convinced there's not a problem we can't
23 solve ^{and} as a team and so, knowing all that, always gave you that sense of security and comfort in

1 anything that you did and I think the danger in that job is to try to think that you know how to resolve
2 the issues. And, you know, quite frankly, we don't. There's no one person that can know how to
3 resolve those issues so you just have to depend on the team to get the job done and be the final
4 vote, be the final say, have a big picture in mind to make sure that we're not overlooking something
5 or that we're not getting in the wrong mind set and just to provide that overall general assessment of
6 how this process is working, how the people are doing and all of the different factors that you have
7 to think about in determining whether you're good to go fly that day or not. There were several
8 launches that we had to work very hard at where we scrubbed numerous times. I can remember
9 sitting there in launch count and just watching it pour down rain on the windows. And I can
10 remember launch countdowns where you're sitting up there trying to find out what to do, figure out
11 what to do, twiddle your thumbs or whatever. We did all kinds to try to stay busy and work through
12 the procedures and those things, but there were times when it was very boring. We always liked
13 those very boring launch countdowns. But both were there and both were equally challenging
14 sometimes. It's exciting to have been a part of those things.

15
16 Malone: Ok. Let's talk a little bit about the people who are a part of the launch team here at
17 KSC and anything you might want to say about how that the team works together or how the firing
18 room works.

19
20 King: I'm just amazed that all of it can come together. I've said before that I believe it's a
21 miracle every time we launch one of these things. And it's only a credit to the folks that work
22 together. No one person knows the details of everything, but it's the way that we organize and work
23 together and integrate and make sure that we ask all the right questions at the right levels of

1 integration to make sure that every thing's proper. I think we a great system, but even more than
2 that we have a great team of people who are so dedicated, work so very hard to make sure that
3 every "T" is crossed and every "I" is dotted and who render judgment on all the issues that we have
4 and all the concerns that we have and do so, so well. It's just a tribute to the quality of folks that we
5 have been able to work with over the years.

6
7 Malone: Ok. Let's talk about any program or process improvements or issues that you believe
8 are worthy of note.

9
10 King: I'm a believer that you get up everyday and you try to figure out how you can be better
11 that day. I do that in my personal life and I expect that from the folks that we work with on the X
12 Space Shuttle team. And I think the team does that very, very well. There are a lot of things that we
13 can do to get better everyday from a procedure perspective, from a process perspective, from a
14 hardware perspective, and software, all of those things I think there's opportunity for us to reduce
15 risk. This team's working very hard to try to reduce risk of this program and I think we've made a lot
16 of progress and that's what we're going to continue to have on the plate for many years to come.

17
18 Malone: Ok. Bob Sieck said he could not remember the cutting of the tie ceremony during his
19 tenure as launch director and what can you tell us about what that process is? X

20
21 King: I can, the only thing I know about that particular festivity, if you will, is that, when I X
22 became launch director I was told that there was a ceremony that occurred after certain flight X
23 systems had successfully passed all their tests or pilots had flown ^{their} ~~there~~ first mission and, or some of

1 those kind of things in the aviation business and, so I felt, compelled to participate in that. Some of
2 the folks in the control room had been doing that, at the lower levels, for a while and I felt like that
3 was a great opportunity to show a little encouragement to one another and to have, make a
4 memory, really, is what we were trying to do with some of those things and to continue that tradition
5 of doing so was, was beneficial in that. I can tell you that it's kind of interesting to see folks realize
6 that for the first time, that they're going to get their tie cut and some really enjoy it and others don't
7 enjoy it quite so much, but it is a tradition that we are going to try and continue, and I think it's a neat
8 one.

9
10 Malone: Do you remember how it got started?

11
12 King: I don't recall the origination of that, I just remember being thrown into the middle of that
13 when I became launch director.

14
15 Malone: Ok. And thinking, you know, you've already stated this is the best job is being launch
16 director and it's obviously a very unique position to have, what advice do you have for future launch
17 directors here at KSC?

18
19 King: Well, I think you've got to keep your eye on the big ball, the big picture and not get
20 down into the details of everybody's job for them. You need to allow folks to go do their job. Ask
21 questions to make sure that the proper rigor was put in on all the decisions that were made. Follow
22 up on details that will help us to get better on a day by day basis, but primarily to keep your eye on
23 the big picture and make sure we're not missing anything from a grand scheme. A lot of those

1 details are in the hands of very, very qualified, trusted folks and picking those folks and keeping
2 those folks in place is, is a key. Having good folks in those, very qualified folks in those positions
3 and then keeping your eye on the big picture, making sure that we're following everything the way
4 we should and then that when we depart from that, that there's good rationale and reason for doing
5 that.

6
7 Malone: Mm-hmm. What about any advice and, you've got a lot of constituents, like you were
8 just describing the launch team personnel here at KSC, very capable, you've also got Washington,
9 NASA Headquarters, and then JSC program folks.

10
11 King: You always have lots of, lots of folks who can advise you. I have ^{quite} ~~quite~~ a few
12 confidants that I'll go to whenever we have situations, and that's always a good thing to have, to
13 bounce things off people who have been there before. I still call Mr. Sieck occasionally and say,
14 Hey, Bob, how would you handle this or what do you think about that, and typically, he's not quick to
15 offer a lot of suggestions, but he's always there and will always say, well yeah, that sounds like a
16 reasonable approach and I think that gives you a sense of comfort sometimes, to be able to have
17 that. I talk to Jim Harrington quite a bit as well. He calls to congratulate us every time and it's neat ^{to}
18 to continue to have that contact, and to bounce things off of those folks 'cause they were very
19 successful for a lot of years and brought a lot of great things to this program, and it's exciting to be
20 ^{apart} of that. Ralph Roe as well, as ^a another former launch director, he's always been a good
21 friend of mine ever since college and we spent a lot of time thinking back ^{about} some of the good
22 times and we talk a lot about some of the issues that are currently on the table, and I think that's

1 very important to make sure that you keep that big picture perspective in talking and you get that
2 from talking to some of the other folks who have been in that position before.

3
4 Malone: What do you think is a reasonable annual Shuttle flight rate and have your thoughts on
5 that and opinions evolved over time?

6
7 King: Uhm. When I first got down here we were trying to fly eight or more a year. I can you
8 tell you that's pretty hectic. I think it's doable and we can, we can do that. I think where we're at
9 today is probably not a bad place to be. Six or seven is, I don't want to call it comfortable because
10 it's not, it's a huge challenge on the teams to get that done, but I think that's a good rate. It's not too
11 many and it's not too few, so I think that's a good balance and about where we are today is a good, X
12 very good place to be. You could ^{go} down a few and not get into trouble or you could go up a couple
13 or three and still be in pretty good shape too. So, but you try, the real goal there is to balance
14 quality of life for the work force. You want to have enough launches so that you really feel like
15 you're contributing and that you're very, very busy and that you're trained and having a good high
16 flight rate is great for that reason at the same time. I remember working way too many hours in a lot
17 of years in the past and that's not good either.

18
19 Malone: You were also deputy and now director of Shuttle processing. What kinds of different
20 challenges did you face in those jobs, between the two if you want to?

21
22 King: Well, you know, at one point when Mr. Sieck left, I became the director, I was the
23 deputy and the launch director all at the same time and I can tell you I did none of those three jobs ✓

1 justice. Those are three major, majorly important jobs, there is just an enormous amount of
2 management that needs to occur in keeping the resources in the right order, keeping the people
3 charged up about what they're doing and pointed in the right direction. And you know, from a
4 program perspective there's plenty to do for several folks there, and then you have the center
5 aspects of trying to deal with the people aspects and more related to the agency and those things
6 are very challenging as well, so all those things combined are, it's several full time jobs. They're
7 exciting, they're all fun to do, they're all very interesting, challenging work and I'd like to think that
8 we've made a lot of progress over the years, in trying to get the resources to the right place so that
9 we can get this job done, the work force can get this job done and those are some very challenging
10 things to go do.

11
12 Malone: Ok. What is your opinion about the idea of privatizing the Shuttle? Do think this will
13 ever happen and kind of describe the critical elements that it would take to make it happen.

14
15 King: With regard to privatizing Shuttle, you know, I think the government does certain things
16 because it's not beneficial for a company to do that, those particular functions. We've evolved over
17 a long period of time where ninety plus percent of our work force is contractor. So privatizing is,
18 how much further could you go and what are the benefits of that. I think there are some fairly
19 significant challenges there. I still think we're pretty on, pretty early on in this program and in space
20 flight, human space flight as a whole and so I still think that there's probably a fair need to have a
21 fair amount of government involvement in that. Do I think that some day we should privatize human
22 access to space? Perhaps, but there are some things that we've got to overcome to get there and, I
23 think over the years we'll try to work through those and see if we can't remove those barriers so that

1 that might be able to happen, and then allow the government to go work on new and different things. X

2 I think that's proper in the course of the process for what the government's about and what the
3 companies are about.

4
5 Malone: Ok. Let's talk about, I think, you've been here at KSC, we talked about the NASA and
6 contractor relationship and how that's evolved and you just mentioned that ninety percent is, of the
7 workers on Shuttle are contractor and it didn't used to be that way. Let's talk a little bit about that
8 and the SFOC contract.

9
10 King: We came through an incredible transition back in the mid-nineties timeframe where we
11 went from NASA oversight of everything and stamping off on every piece of paper and verifying
12 everything was done properly to a very different way of doing business, the way we do it today
13 where we just provide an insight. We retain some functions, launching and landings, those kinds of
14 things, but primarily the contractor does the overwhelming majority of the work and we're there to
15 make sure that it gets done correctly. We went through a period there of about three or four years
16 where we transitioned a lot of the work that NASA folks were doing to the contractors. We validated
17 that they were ready to do the work, qualified to do the work, and then after we gave them the work
18 we went back and verified that it was being done properly. We've put a surveillance program in
19 place on what gets done down here to get a vehicle ready to go fly and the NASA folks are still
20 overseeing those things. We're still very involved in the out of family resolutions, the new things, but
21 the day to day things that this contractor is perfectly capable of dealing with, we've backed out of
22 and I think, that was a good thing and it provides the opportunity for NASA folks to go focus on other
23 things. So, any kind of change when you're talking about a program where the risks are as high as X

1 this one is a difficult thing to overcome. It was difficult for me and then it was difficult for me to lead,
2 to help lead the rest of our organization to go and do those things, but I think we've done a very,
3 very thorough job of that and I think we've got a great system in place now that works very well.

4
5 Malone: So was it, was it difficult for the employees to make this transition on the NASA side
6 and the contractor side?

7
8 King: It was difficult on both sides. It was, you know, the contractors were ready. We have
9 very, very capable contractors and they were very ready, but it was difficult for the NASA folks to let
10 go of some of things that they had been doing for years and it was difficult for the contractor to see
11 some of that happen in some respects as well, so, working through that I had the same feelings
12 that most of the NASA folks had about handing some of those things over. And it was a very
13 difficult time in working through, but as I said, I think what we have today is very healthy, I think it's
14 still very robust and, and I think it's as safe or safer than the end product that we have had in the
15 past.

16
17 Malone: Give me an example, and you can pick any one, when you're saying handing over
18 from NASA to the contractor.

19
20 King: Many of the tasks, thousands of tasks that occur, getting a vehicle ready to go fly are
21 more routine in nature. We do them every time, same way, same thing. Many of those things we
22 used to be there for, we used to be a part of or call out the step in the book and stamp the paper
23 and now we are not there for many of those routine things. We are still there for any new things that

1 are new and different, but there are quite a number of steps that are routine, done over and over
2 again, that this contractor is perfectly capable of performing. So we turned, I believe there were 305
3 tasks that we outlined, and very carefully, through a structured approach went through transitioning
4 those functions to the contractor and those tasks could be over a lot of different requirements, so it
5 was pretty comprehensive plan in the way we went about doing those things.

6
7 Malone: And how many years did that take to do?

8
9 King: It really took a couple or three years, I'd say, probably over a three year period the
10 majority of that was done. We began that at the beginning of the SFOC contract, really, in '96 and it
11 was probably late '98 before we were primarily complete with that.

12
13 Malone: And was that part of the SFOC contract, was to do that handover?

14
15 King: Yeah, it was part of the philosophy change that the agency had undertaken, which
16 looking back on it now, I think was a good thing. At the time it was difficult to deal with and, but I
17 think was a good thing.

18
19 Malone: Ok. Just kind of talk about the numbers of people that work out here on the Shuttle
20 program both for NASA and the contractor.

21
22 King: Ok. In the Shuttle program here at KSC, in the Shuttle processing directorate we have
23 about 370 folks. We have another couple of hundred around the center that support the Shuttle and

1 that's basically full time equivalents. We have a lot of people who touch it twenty percent of the
2 time. And that's the NASA work force, about 550 to 600 folks that work on Shuttle and then we
3 have about five thousand contractors that work here, United Space Alliance and others, that do the
4 hands on work, that are charging to the Space Shuttle Program. So it's a pretty large work force,
5 pretty comprehensive, from ground operations to solid rocket booster processing to logistics and
6 many others that are all a part of the, the Space Flight Operations Contract.

7
8 Malone: Do you know whether or not that number has changed since when you first came to ^X
9 work here?

10
11 King: That number's gone down quite significantly. I can recall that, comparable numbers
12 and we've changed the way the contracts are, so it's sort of apples to oranges, but we had well over
13 7000 and I think at one time about 8000 folks working, contractor folks working on Shuttle, when I
14 came to work here. And as I said, now we're down in the 5000, right around 5000 range. And from
15 a NASA perspective there were 1200 folks charging to Shuttle when I got here and so we're about
16 half of what we were at one point there are well.

17
18 Malone: Ok. Let's ^gmove on to the future. What is your opinion of the new launch vehicle
19 initiative and what role should KSC play in this and when do you believe we will have a new
20 reusable launch vehicle?

21
22 King: Boy, I really don't know. I can tell you that we have some technology gaps that we
23 need to fill in before we build a new vehicle in my estimation. I'm getting ready to find out a lot more

1 of that firsthand in my new position, but based on what I've read and seen and heard from talking to
2 other folks I believe that we could replace the Shuttle today, but I don't think it would be appreciably
3 different than what we have. I think that we should go work some technologies for some period of
4 time, try to find some other ways^g of accomplishing the goals that we have for station and some of
5 the other agency goals that we have through Shuttle and perhaps some other means. But we ought
6 to be working on the future, too. We ought to^{be} working on that very, very hard because I think we
7 need to continue to move forward. The government^g, as a whole needs to be working on newer and
8 better all the time and so I think we need a very, very concerted effort to go do that. I believe
9 whether we build a second generation vehicle or skip to go to a third generation type of vehicle with
10 some newer technologies are some very key decisions that have to be made in the coming months
11 even and those are going to be very, very important decisions for the future of the agency and
12 where we're going. What was the other part. . .

13
14 Malone: Well if^e if we do get another vehicle obviously we'd be launching from KSC. . .

15
16 King: What's our role?

17
18 Malone: . . . what can we provide them in the design part of it and?

19
20 King: How could I forget that? KSC would play a very, very important role in development of
21 any new vehicle and I believe we're beginning to help some of the other entities around the agency
22 to understand that. Operational costs are very large in many of these programs. The operational
23 cost of the Space Shuttle is a lot higher than we would like for it to be and there are some reasons

1 for that and some of that goes back to the design of the vehicle. So we are going to work very hard
2 at Kennedy Space Center to try to influence the design so that these vehicles ~~are~~, are more ~~what~~ ~~I'll~~
3 ~~call~~, I call "processable". They're much more operationally efficient in getting them ready to go fly
4 and I think that should be Kennedy's role in addition to the typical things that Kennedy's done over
5 the years and that is knowing how to take a vehicle and get it ready to go fly along with all the
6 systems that are necessary to do that from a ground support perspective. So more than just the
7 traditional role, hopefully Kennedy will play a larger role in affecting the design of the vehicle so that
8 they're more operational in nature.

9
10 Malone: And, go on. I think it's worthwhile to get your comments about KSC's infrastructure
11 situation at this point in time where we are right now if you want to comment on that.

12
13 King: The infrastructure is in need of some repair. You know, for years, I think, we have
14 been trying to figure out where we're going with this program, privatize, commercialize, where are
15 we going. And I think, all of that has had some bearing and the budget cuts that we have
16 undertaken over the past few years have, we've not spent as much on the infrastructure as we need
17 to. I think we've got our arms around that now. We know what that is. Funding is beginning to
18 show up in fairly large chunks and I think we're going to be able to overcome that in a few short
19 years, but we can not forget about that until, you know, we have the facilities and infrastructure back
20 in the kind of shape that it needs to be in. We owe that to the programs and we owe that to the
21 agency to make sure that folks down here who are responsible for getting these vehicles ready to go
22 fly safely have the resources to do that in a way that is safe and efficient and so we can't lose sight

1 of that until we have that problem solved. I think we're well on our way to solving that problem and
2 now it's a matter of going and making the work happen. . .

3

4 Malone: And, and. . .

5

6 King: . . . which I think also KSC is the best at.

7

8 Malone: And just as an example, let's just say that the situation in the Vehicle Assembly
9 Building, just describe what that is today.

10

11 King: We have a roof that's aging, we have other infrastructure there, side panels that need
12 to be beefed up. We lost quite a few panels on some storms that came through and we just need to
13 have that building in a position that we can support Shuttle launches for a long period, for a long
14 time to come. And we need to spend some money to do that. It's just like your home where you
15 need to spend some money to replace the roof every now and then. You need to spend some
16 money to paint it occasionally and to do some of those repairs. And so, we've not done that for a
17 while and now we're in the process of trying to get those building ready to support for a lot of years
18 to come.

19

20 Malone: You talked a while ago about the operating costs are high for running the Shuttle
21 program just here at KSC, do you, just a, a round number of what it might cost here at KSC today to
22 operate and ground process?

23

1 King: We're actually a fairly small percentage of the Shuttle budget today. I believe the
2 Shuttle budget's around three billion dollars and I think our budget here is around six hundred million
3 dollars, so, what is that, a thirty percent or less of the cost of operating this program today are here.
4 Many of those other costs are hardware costs to buy tanks and boosters and engines and all of
5 those kinds of things, but we're about thirty percent of the Shuttle program today, or a bit less than
6 that and.

7
8 Malone: I was going to say, does the money come from JSC, does Houston spend for the
9 SFOC contract which those five thousand or so people you talked about?

10
11 King: Yes, that money, of the six hundred million, the biggest chunk of that comes through
12 the Johnson Space Center where the SFOC contract is held, and so the overwhelming majority of
13 that money comes through Houston to United Space Alliance to pay the work force down here.

14
15 Malone: Ok. What key moments or events might be most memorable in your experience here
16 at KSC and, if you want to describe some of those?

17
18 King: Well, you know there have been a lot of great times. I've been here for, I think, a 
19 hundred and three launches and landings. They have all been unique in their own way, that's
20 what's neat about working here, although they are very similar in the way that you go about them,
21 they're all very unique in their purpose and what they are about to accomplish with the Station and
22 Hubble and many of the other things that we've done over the years. The thing that sticks in my
23 mind the most though is the people and the comings and the goings of incredible people who have 

1 worked here for sometimes thirty-five or forty years in trying to help this agency accomplish its goals
2 and have done just an incredible job. So when I look back at my experience here, I really think of
3 people's faces more so than I do Shuttle launches and what they taught me, what I learned from
4 them, what we were able to accomplish as a team and some of the friendships that I have made and
5 continue to hold very, very dear to me in my life. And it's just incredible to have been able to be
6 associated with such a great group of folks who are so incredibly talented and who have incredible
7 passion for what they go about doing every day. I'm never ceased to be amazed at the passion with
8 which people carry out their duties here and the things that they will go do to try to meet the goals
9 and be successful.

10
11 Malone: Ok. What changes or new initiatives or directives did you undertake that you might
12 want to talk about while you've been here?

13
14 King: Changes. You know, it's very interesting working for a government agency because
15 the pendulum seems to swing between different philosophies and the greatest thing about all that is
16 all those philosophies are good and correct, they're just different at times and so trying to
17 understand what the goals of the agency are and to try to implement them in a way that gets the
18 work done and meets the goals is what I find fascinating and have found fascinating for years, and
19 it's exciting to be a part of that and I look forward to doing that in the future as well, but the
20 accomplishments are many when you think of a hundred plus Shuttle launches, and then all of the
21 science and things that have come from that, from probes to stations, to space labs, and, you know,
22 physical sciences and the things that have been accomplished as a result of all that work is just

1 incredible to me and the pendulum will continue to swing and, I know that this work force will
2 respond to that in the proper way and deal with that accordingly.

3
4 Malone: Ok. How do you think the center leadership approached inherent risks involved in all
5 space flight projects and how did you characterize those kinds of risks and failures that might
6 result? Did you have any specific techniques when you had to either work with the contractor or
7 with center management or program management?

8
9 King: You know, the way we deal with risk, we're still learning about. I think we are getting
10 so much better at it in trying to parcel it out into several different pieces and deal with them
11 individually. But really, when you think about what we do, every decision we make is a risk decision
12 and so, simply, it can be almost explained as simply as every thought that you have about this
13 vehicle and is it ready to go fly is a risk decision and you have to find different techniques and ways
14 of assessing that. You have to work very hard at getting the right people involved so that they can
15 properly assess that risk and I think that's one thing that we've done a lot better job of and we need
16 to continue to get better at and that is finding the right experts to weigh in on the right problems,
17 because either solving the wrong problem or solving the right problem with the wrong person
18 sometimes can lead to not so good decisions. So, matching all of those things up and determining
19 how you're going to deal with some of those risks is very interesting, but we spend, you know, a lot
20 of time every day weighing those risks and we have an awful lot of great people who do that every
21 day.

1 Malone: And this next question kind of plays into that, do you see that the center's role has
2 changed over time within NASA and how has it affected our center over time?

3
4 King: You know, I think in general, I think a lot things have changed with regard to KSC's
5 role, however, I think it has stayed primarily the same and that is, putting the right people and
6 resources in place to launch these things and to do it safely. And I think that is KSC's role and that
7 should remain KSC's role in the agency. That's what we have done well for years and I think many
8 things will change around that, but that will be the cornerstone for what Kennedy is known for.
9 Kennedy is known for finding ways to go get things done and they've done that for a lot of years,
10 and having been here for nineteen years now I certainly see a lot of accomplishments, and many
11 times when you saw the goal be put before you, you wondered how that would ever happen and
12 KSC team continues to find ways of making those things happen, has for years and I think will.

13
14 Malone: And our center director, Roy Bridges, is as you point out, we're still steady on
15 operating the Shuttle, getting the Shuttle through with the ground processing and launching it and
16 safely landing and all the Space Station elements or payloads, that go along with that and, our 
17 center director is looking down the road for KSC in terms of coming up with a spaceport technology
18 a. . .

19
20 King: I think there's a lot more that we can do, obviously. I think the core of our business is
21 going to be getting payloads and vehicles ready to go fly and fly them. But, there are certainly a lot
22 of things that we can do to help support that. You know, when the Apollo systems were put in place
23 there were design engineers here who built these MLPs, mobile launcher platforms and crawlers

1 and launch umbilical towers and all those things to make that happen. We're going to need to be
2 ready to make that happen for the next vehicles that come and so we have to have a work force that
3 is capable of doing that. And I think that some of the things that the center is trying to do today are
4 helping us to maintain that capability to do those things, and will help us to do that better in the
5 future.

6
7 Malone: What advice would you give to a person coming in, just joining NASA/KSC as a just
8 out of college?

9
10 King: I've given advice to folks out, one of the things that I like to do is whenever we hire
11 somebody new after they've been here a couple of months, I have them spend a day with me and
12 I'm always encouraged and just enthused about the opportunity to spend time with folks who come
13 in from the outside, new, fresh face. I can remember, first day I was here, got badged, went in, got
14 in the vehicle and just, I was just amazed, I was absolutely amazed and I'm, my jaw hit the floor
15 thinking, wow, what a responsibility, what an opportunity. And I try to help folks understand that,
16 that this is an incredible opportunity for them to have a career that is just absolutely very fulfilling
17 and as far as advice to them, I try to tell them basically, their attitude is the biggest part of what they
18 do here and how they approach things. I try to help them understand that they are not smart
19 enough to solve all the problems and so they have to work, learn how to work together to get things
20 done. I think that is an aspect and an attribute that is absolutely essential for folks that work at KSC
21 and that is to be able to figure out how, as a team, to get things done the right way and so, having
22 the attitude of working together, try to get and, with other folks to get things done. And then the third
23 thing that I talk to them about is the attitude of trying to get better every day, as we talked of earlier.

1 I just think it's so important to wake up every day and think about what can I do to make myself
2 better or make this team better as a whole and I think if we all approached our daily walk that way
3 that we would be, all be better as individuals and as a team.
4

5 Malone: What are some of the best practices and lessons learned that you'll take from
6 Kennedy as you move into Marshall and assume your new responsibilities there?
7

8 King: Boy, I just think that the learning how to work with people, learning how to deal with
9 complex issues and break them down to the real bottom line, getting to the real root cause of issues
10 and then solving them one piece at a time are the building blocks that are a big part of me and my
11 makeup and that I think will be very beneficial. You know, obviously, I'm a lot smarter technically
12 today than I was then, on the other hand, there's a lot of engineering that I used to know how to do
13 that I don't know how to do anymore, too. But I just see more and more every day, the opportunity
14 to work together with others and figuring out how to solve these complex problems in a more simple
15 fashion is going to be a key, and trying to figure out how both parties can benefit from a solution I
16 think is very, very important to being able to fulfill the agencies goals while also trying to contribute
17 to the center's goals as well.
18

19 Malone: The next question kind of answers that, I think you may have answered it, are the very
20 any changes you'd like to advocate in the relationship and roles and responsibilities between KSC
21 and Marshall, the other NASA centers, or Headquarters.
22

1 King: Well, as you know, our administrator has embarked on something called One NASA.
2 We are in the process of trying to bring centers closer together, to try to have more of a common
3 goal between goal between centers and I'm looking forward contributing to that. I know that there
4 are expertises for each center and those are well and good, those core competencies are very
5 important to maintain. At the same time I think that we can work more closely together in ensuring
6 that the goals get met of the agency and meet the goals of the centers. So, I'm very hopeful that we
7 can work more closely together, to use each other's strengths. I'm a big proponent of using people
8 to their strengths so we ought to be using the center's to their strengths and I think the outcome is
9 always better when you do that in a very organized fashion.

10
11 Malone: It's hard to have a crystal ball, but if you were to look back in fifty years what would
12 you think you would see in space flight?

13
14 King: Well, I sure hope that we see routine spaceflight. I sure hope that we see tourism. I
15 sure hope that we are continuing to look beyond what we've been able to see today. I hope that all
16 of those things have continued to significantly contribute to the way of life and the standard of life
17 that we have today and I think if we continue down that path then all those goals will be met. I'm
18 inspired by working for an agency that has such a futuristic view and, boy fifty years from now is a
19 long time, ~~but,~~ but I certainly think if we continue along the same track that there will be some pretty
20 major changes in the way that we look at this world and beyond. So I'm excited to be a part of that.

21
22 Malone: And one final question. You talked about having worked a lot of hours in your earlier
23 career. How did you manage to balance your family life with work?

1

2 King: Well, there are times when you need to be here and it's clear that you need to be here
3 and then there are times when there are discretionary hours and I try my hardest to be home when I
4 need to be home. There are basic things that you need to be at work for and there are basic things
5 that you need to be at home for and then there's some discretionary time in the middle and I try to
6 balance that discretionary time. I work very hard at being a good husband and father as well as
7 being a good employee and I try real hard to encourage our folks to do the same thing. I think a big
8 part of that is just judgment as to when it's time to go home. And when something is done good
9 enough and it doesn't have to be totally perfect, especially when you get into the management
10 ranks, it becomes a little easier in some cases to do that. So, it's very difficult to do. You stay up
11 late a lot at night in some cases to get things done that need to be done, but I think it's important to
12 live that balance in life and I think we're all better employees when we have that balance in life. I'm
13 certainly better when things are going well at home and I've spent the right amount of time at home,
14 and I'm here for the right reasons, when I do those things. And so I think that's very important and
15 encourage others to do the same.

16

17 Whispered Voice: How much time do we have?

18

19 Malone: Three minutes.

20

21 Malone: I wanted to ask you about your, the age, you know, where's there been, you
22 know, you're young to be where you are. Have, how have you overcome that?

23

1 King: Well, you know, I guess I never really thought about that a lot. Only when I got the
2 next job did I really think about that much. I think the best way to approach that is just to work hard,
3 do the best job you can, worry about what you can do something about, and I use this term a lot with
4 some of our folks, keep your head down and keep coloring and it's a very simple approach, but
5 that's really the way I try to approach it day by day job. And you gain the credibility by working hard,
6 doing the job, and getting better every day. And if you do those things, people will respect you for
7 the work you do and not how old you are. And, and that's the way I try to approach it. X

8
9 Malone: Ok. Any final thoughts?

10
11 King: It's been an awesome opportunity to work at the Kennedy Space Center. I just can't
12 tell you, it's made me the person that I am. This is my family and I've had a great opportunity to be
13 here and I'm looking forward to going on to new things. Time to turn the page and start a new
14 chapter and that's going to be exciting as well. I know the Kennedy Space Center has a huge role
15 in the future of this agency and I'm looking forward to trying to help to continue to make that and be,
16 and to help that be successful.

17
18 Malone: Ok. Thank you.

19
20 King: Thank you.