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COMMERCIAL CREW & CARGO PROGRAM OFFICE
ORAL HISTORY TRANSCRIPT

RANDOLPH H. BRINKLEY
INTERVIEWED BY REBECCA HACKLER
MOUNTAIN CITY, TENNESSEE – 1 MAY 2013

[This oral history with Randolph H. Brinkley was conducted via telephone from Houston, Texas to Mountain City, Tennessee.]

HACKLER: Today is May 1, 2013. This telephone interview for the NASA Commercial Crew & Cargo Program Office History Project is being conducted with Randy Brinkley, who is in Mountain City, Tennessee. The interviewer is Rebecca Hackler, assisted by Rebecca Wright, who are in Houston, Texas at the Johnson Space Center History Office.

We'd like to first of all thank you very much for taking time to talk to us this afternoon, and we'd like to begin by asking you briefly to share with us how you first became involved with the Rocketplane Kistler [RpK] commercial venture.

BRINKLEY: It's a pleasure to be able to spend some time with you this afternoon. In answer to your first question, after I left Boeing Satellite Systems [Inc.] as the president, I took on the position as the Chief Executive Officer of Kistler Aerospace Corporation, which had been intimately involved with the project to provide a reusable launch vehicle for NASA as part of that activity [Alternate Access to Space Station]. Subsequently there was a plan within NASA to look at opportunities for providing commercial transportation to the International Space Station [ISS Commercial Cargo Services].

Over a period of time, the Kistler Aerospace Corporation was purchased by Rocketplane, and I subsequently transitioned to the president of Rocketplane Kistler and led the activities for the Kistler portion of the company, which continued to be involved with the development of a reusable launch vehicle that subsequently competed for the Phase I COTS [Commercial Orbital Transportation Services] contract.

HACKLER: We know you were the ISS Program Manager for many years in the 1990s. When you were in that role, were there any discussions about having commercial transportation to the Station?

BRINKLEY: There were some preliminary discussions about that, but it was more of a conceptual effort. After I left the International Space Station, Dan [Daniel S.] Goldin, the NASA Administrator, had approved a sole source contract to the Kistler Aerospace Corporation to deliver technical documents related to the development and launch and operations of a reusable launch vehicle [Space Launch Initiative], and that launch vehicle conceptually could provide cargo resupply to the International Space Station. That was, I would say, the preliminary effort under a sole source contract to develop a U.S. commercial cargo transportation capability as a potential augmentee to the NASA Space Shuttle.

HACKLER: Can you talk about your role in the COTS competition and how that proposal was put together for Kistler?

BRINKLEY: I was overall responsible for the development of the response to the RFP [Request for Proposal] by Rocketplane Kistler, through that whole effort, which began with an RFI [Request for Information] in the December timeframe and resulted in the first downselect in the May timeframe of 2006. Then following on the final selection in August of that year, I was in charge of the efforts within Rocketplane Kistler for the development and demonstration of that capability.

HACKLER: Can you talk about RpK's technical and business plan? What sort of value proposition did their vehicle bring to the market?

BRINKLEY: The unique thing about the Kistler K-1 vehicle was that it was completely reusable, and because of that, its price point per kilo[gram] to the Space Station was significantly less than any of the other competitors, all of which were expendable launch vehicles and would require a great deal of follow-on recurring expense to develop another rocket that would be destroyed during the execution of providing cargo to the Space Station. The other part that was a significant advantage to the K-1 was that because it was reusable, it was able to bring downmass, cargo, back to Earth. Of particular importance was scientific cargo, like protein crystal growth. Downmass was valued as actually more important than upmass in terms of the NASA evaluation under the RFP.

HACKLER: Can you describe what some of those negotiations were like? We understand that in the due diligence process NASA representatives came to visit with the companies.

BRINKLEY: The NASA COTS team, with augmentees from other organizations within NASA, visited each and every one of the competitors during the RFP process. There was first a series of oral discussions by phone, and then there was a face-to-face interface with each one of the competitors. Following that, there was an initial downselect. As I recall, there were 22 competitors for the initial downselect, and I believe there were six competitors for the final downselect. Rocketplane Kistler was one of the six, and then ultimately was one of the two selected under the RFP.

HACKLER: Do you remember what sort of issues came up during the negotiations? What were the primary sticking points, or areas that you had to work out with NASA before you signed the Space Act Agreement [SAA]?

BRINKLEY: One of the biggest issues we had from a business perspective was NASA's commitment to a follow-on servicing contract that you could put in a business plan to investors that they could evaluate what the follow-on revenue stream would be. The way the COTS RFP was structured, there was no follow-on service contract defined. There was only funding for the two or three demonstration flights, depending on the competitor.

NASA would pay for those, but there was no follow-on option to exercise that would guarantee x number of flights at a particular price point. That was a follow-on to-be-determined contract [Commercial Resupply Services], which subsequently turned out to be fatal to Rocketplane Kistler because of the lack of certainty of follow-on revenues associated with what is currently the contract that Orbital [Sciences Corporation] and SpaceX [Space Exploration Technologies Corp.] were awarded.

HACKLER: I'd like to ask you in more detail about the termination, but before we get there, can I ask you to describe your experiences working with NASA? We understand since these were Space Act Agreements, as opposed to contracts, to demonstrate a capability instead of buying a service or product, some of the relationships were a little bit different. Can you describe how you worked with Bruce [A.] Manners, the [COTS] Project Executive, or other people in the COTS office?

BRINKLEY: Bruce worked for Alan [J.] Lindenmoyer [Commercial Crew and Cargo Program Manager] and his team. I had known Alan for a number of years. He worked for me as head of the configuration management on the Space Station Program. Valin [B.] Thorn [Commercial Crew and Cargo Deputy Program Manager] had worked for me. I knew all of the leadership within the COTS program—all great individuals and very fair and very much motivated on NASA's behalf—and I think they did an exceptional job through all of that.

I would have to say, though, that none of them had a great deal of experience base in this area, and it was through no fault of theirs. No one in NASA had a real appreciation of what a financial investor would require to invest in such a project, for that matter. The understanding on their part of how a financial investor would see whether or not they would be willing to invest was an area of a good deal of discussion and concern within Rocketplane Kistler, in terms of if we win the COTS [competition], how successful are we going to be to get the other two-thirds of the funding in order to complete the development of the vehicle. The lack of a defined revenue stream for ISS servicing was a crucial impediment to financial investor funding. In the end, both SpaceX and Orbital Sciences had to provide self-funding for the project.

HACKLER: How did you work with NASA to try to get that funding, or work with other groups?

BRINKLEY: NASA was very good about interfacing with potential financial investors. They wanted to participate in the investor "road show," to be able to respond to questions that various potential investors might have or did have during the due diligence. Mainly that was headed up within the COTS program, but there were other people that supported them from [the NASA Office of] General Counsel, mainly from JSC, as well as Mr. Alan Marty. He was an outside consultant from the investor community. Mr. Marty was a great asset to the COTS program and also very helpful to us as well.

I would have to say because Kistler already had a sole source contract, based on the K-1 vehicle, there was high confidence, I think, from the NASA side about the technical merits of the K-1 vehicle. The questions and the concern from a NASA perspective were the financeability of Rocketplane Kistler for the development of the K-1 rather than the technical side of things. That would be different, I think, from some of the other competitors who really were talking about a vehicle that was still on the drawing boards and more at the viewgraph level than our vehicle, which had the first vehicle 50-percent plus completed.

HACKLER: Did you also work with the ISS Program Office as far as meeting the requirements for docking?

BRINKLEY: Not directly, but they participated because they provided the specifications and the requirements that were included in the RFP. Again, under that previous sole source for the K-1

in the NASA contract, those requirements were pretty well understood by the Kistler team, and the vast majority of the Kistler team had a close relationship [with NASA]. Some of them had actually worked on the Shuttle Program and on the Space Station Program, and were very familiar with the requirements for the Space Station. I certainly understood them.

HACKLER: We would think so. You mentioned the road show, when the company went to try to find investors. Can you talk more in detail about that—where you went, which companies you talked to, and then ultimately why those negotiations didn't pan out?

BRINKLEY: Sure, I'd be happy to. Once we had completed the acquisition by Rocketplane of the K-1, our focus was on responding to the RFP and the financing of that, which required us to find an investment banker that would have the lead in terms of financing the Rocketplane Kistler portion of the financing to match our proposal for the RFP with NASA. We chose Jefferies Quarterdeck [LLC]. We had had a previous relationship with the Kistler company. They were a known entity in terms of raising funds from financial investors in the aerospace sector, and so as we moved to prepare our response for the RFP, we also were working with Jefferies Quarterdeck as an investment banker to prepare the appropriate documentation for an investor "road show" and to support various investors' due diligence of the company, Rocketplane Kistler.

HACKLER: When you would meet with potential investors, how did those meetings proceed? What kind of discussions did you have?

BRINKLEY: We had lengthy discussions, technical discussions, but again, the real lynchpin of the discussions was under the business plan—what were the terms and conditions and guarantees associated with the follow-on revenue stream that would give them confidence of investing some $500 million into the company? Those were difficult because, again, they had to invest just based on the Phase 1 contract which only provided some $213 million by NASA to develop the vehicle. The investors would have to come up with roughly $500 million. It was roughly a 1:2 ratio with NASA putting in one-third, and the financial investors under Rocketplane Kistler would have to put in an additional two-thirds of the required funding.

The discussions were: what's our guarantee that there is going to be a follow-on service contract, how do we know that NASA's not going to cancel it or never issue one; how long is it going to last; and when are we going to get our money back? The RFP for the follow-on had not come out. The RFI had not even come out, so there was a great deal of discussion and uncertainty there in terms of understanding the risks and the certainty of whether NASA was really committed to commercial space, and was NASA really committed to a follow-on contract that would justify the initial investment by investors.

There were a lot of discussions with myself and my team, but there were also a lot of discussions with Alan Lindenmoyer and Bruce, Valin, Alan Marty, and the NASA team about what the confidence of commercial cargo transportation to the ISS and the associated revenue stream for such transportation. Is NASA really going to do this? Is NASA really committed to commercial space?

HACKLER: If you're able to share this information, which investors were you talking to?

BRINKLEY: Our lead investor was the Ontario Teachers' [Pension Plan] investment fund. They're a billion-dollar Canadian investment firm that has all of the retirement funds in the Province of Ontario for all of the teachers. They also were the majority owner of MacDonald Dettwiler [and Associates], a Canadian aerospace firm that I had a longstanding relationship with. MacDonald Dettwiler had built the robotic arm [Canadarm] for the Shuttle, and had built all the robotic arms for the Space Station.

Because of that, I had a long-term relationship with MacDonald Dettwiler. They very much wanted to make the investment. It was an opportunity for them to move into the U.S. market, and to leverage their robotic expertise on the K-1 and with the Space Station. They were supported by their primary investor, the Teachers Fund. The Ontario Teachers' Pension Plan made a Letter of Intent commitment for some $200 million, so they were the lead investor working with our investment bank, Jefferies Quarterdeck, as we went to the market for other financial investors to fill out the needed $500 million of funds.

HACKLER: And as you understood it, what was the reason that investment didn't work out?

BRINKLEY: It was primarily that when the RFI for the follow-on ISS servicing contract came out in July [2007], unfortunately, at the same time we were in New York [City, New York] with our road show, the RFI only indicated a commitment by NASA of three servicing missions.

The business case would not close for the investors to make that kind of investment. That was a terrible disappointment, and it really was the financing lynchpin to Rocketplane Kistler which subsequently precipitated the defaulting, because we needed to get the additional

funding commitment of investors to complete the technical milestone and the financing milestone defined in the NASA COTS SAA.

With an RFI that says NASA is only committed to three additional servicing flights to the ISS, the initial investor financing commitment unraveled. Subsequently, when the RFP actually came out, and after we had been defaulted by NASA, it was a $1.9 billion dollar commercial servicing contract commitment for one awardee, and $1.6 billion for the other. Clearly much different than just the three defined in the initial RFI.

That's really discussed in great length in the letter that I wrote back to Dr. [Scott J. "Doc"] Horowitz in response to his default letter, explaining that RFI basically unraveled everything. If that RFI had been consistent with the RFP, Rocketplane Kistler would have been funded and met its COTS SAA commitments to NASA, and there never would have been a default nor follow-on COTS SAA recompete. Unfortunately for Rocketplane Kistler, that's what happened.

HACKLER: Unfortunately, as we know in retrospect, NASA did terminate the Space Act Agreement with Rocketplane Kistler. Can you detail for us how events transpired from your perspective?

BRINKLEY: The road show was in New York from the week of the 17th of July—the same time the RFI came out—and within six weeks, the lead investor, the other investors were not willing to make a commitment until the RFP came out and clarified the three [ISS resupply missions].

Of important note, the RFI didn't come out of the COTS program where Alan Lindenmoyer and his team were, who were very sensitive to the importance of a revenue stream

for the evaluation. Instead, the ISS commercial servicing RFP came out of the Space Station Program Office. That program office was obviously not sensitive to the revenue stream, and that disconnect led to the demise of Rocketplane Kistler. It got fixed before the RFP finally came out, but it was too late for Rocketplane Kistler.

In the financial world, basically, after the Fourth of July weekend Wall Street [New York financial district] pretty much takes the summer off, and they don't get engaged until way after Labor Day. Nothing of significance happens during that timeframe. The timing could not have been worse for that RFI to come out just as we were having everyone in New York for the road show before they took their summer holiday in August and Labor Day. It came out just as we were doing the road show, and basically unraveled everything.

By the time everybody got back to work, and the RFP came out versus the RFI, weeks had passed and we had missed two COTS milestones. We were issued a letter of default by NASA. All of that is defined in great detail in the letter I sent to Doc [Horowitz], and which I will provide to you.

HACKLER: Can you describe the main points of your correspondence with Scott Horowitz?

BRINKLEY: The main points were an explanation as to why we had not completed Milestone 4 and 5. We didn't complete the technical milestone [Milestone 5], which was the Critical Design Review for the payload module, because we had not been able to complete the funds [Milestone 4]. We did not have the funds to do it because of what had happened with the RFI, which had come out from another organization that was not at the time under Dr. Horowitz. It was in a different organization, as previously mentioned. We explained there were two things that had

adversely affected us, and both primarily had to do with that RFI that did not have a long-term revenue stream associated with that ISS commercial servicing contract.

HACKLER: Did RpK ever try to contest the termination of their Space Act Agreement?

BRINKLEY: I wrote a letter rebutting it, but I was not involved with the RpK effort subsequently to contest the termination. In fact, that was one of the factors that cause me to resign my position at Rocketplane, because I was not going to be a part of a lawsuit against NASA.

HACKLER: Out of curiosity, do you know what happened to the company and the technology that they had developed?

BRINKLEY: Yes, I do. I had several discussions with the new NASA Administration—with Lori [B.] Garver [NASA Deputy Administrator] and others—and my position was that NASA had pretty much paid for everything that had been done to date on the K-1 vehicle, and there was real value in keeping that work that had been done, and that it was a shame to just have that become scrap because the company was not able to continue to pay for storage at [NASA] Michoud [Assembly Facility, New Orleans, Louisiana]. I tried to emphasize that it was in NASA's best interests to cut some deal not to see that technical database lost after having so much money being spent on it.

There was a decision by NASA to delay doing anything, even though the company had not met its payment obligations for storage at Michoud. Subsequently, I think, the company then

moved it into another warehouse somewhere nearby. Ultimately there was a bankruptcy for the company, and those assets were, I think, disposed of in salvage, penny-on-the-dollar so to speak.

HACKLER: Thank you for sharing your perspective. I wanted to see if Rebecca Wright has any questions she wanted to follow up with.

WRIGHT: Thanks, Randy. It's kind of a reflection question, because you spent so many years working on the NASA side, and you also spent many years working on the industry side. Could you share with us your thoughts and reflections about what you thought when you first heard of NASA taking a stronger move into the commercial space industry, and what you feel are the pros and cons of that?

BRINKLEY: I was concerned, going back to when I was the Space Station Program Manager, that we would not be able to achieve the scientific benefits of the Space Station if we did not have a reliable follow-on space transportation system. I was concerned because there was a great deal of discussion even then that they were going to shut down and eventually close the Space Shuttle Program.

I was always concerned about reliance on Russian space transportation vehicles because of the difficulties that we had during the early days of the Space Station when we lost one of our Shuttles, and how problematic it was to rely on the Russians for transportation to and from the ISS. And on top of that, the Russians had no downmass capability. The ultimate purpose of the ISS was to be able to achieve scientific breakthroughs, and to be able to do that, you needed to be able to bring science specimens back to Earth, like protein crystal growth.

I was concerned, and I remained concerned that we were going to ultimately find ourselves with a Space Station that was not going to be able to achieve those results because we had not thought through and had a follow-on reliable space transportation system. I would say that's exactly what happened. We've got a gap that's just now being closed for cargo to the ISS, but U.S. transportation of ISS crew is still years away and the Russians remain on the critical path of ISS on-orbit performance.

One of the primary reasons I took the job at Kistler was because the K-1 vehicle was designed to be fully reusable, and I had such strong feelings about being able to make the Space Station—the science platform that we spent $100 billion on—to enable it. I saw that the K-1 had that capability. It was very important to me, having spent 10 years in NASA, and I don't know how many hours, working to see the Space Station become successful.

WRIGHT: Your team had a tremendous amount of spacecraft development experience with Joe [Joseph W.] Cuzzupoli and Dick [Richard H.] Kohrs.

BRINKLEY: They're the best. And Dr. George [E.] Mueller, who was the program manager for Apollo, who built Skylab, who designed the K-1—for me, going to Kistler was an honor just for those guys to even be willing to accept me.

Joe had been around the Shuttle all his life. When I first came to NASA, Joe was on the advisory board for the initial repair of the Hubble [Space] Telescope, and later the ISS. He was one of my greatest mentors. When I didn't know anyone, he would take me aside and give me some guidance. He was someone I could call on. Dick I'd known from the [Space Station]

Freedom days and had great respect for him. And Dr. Mueller—he's one of the most amazing people in the history of NASA.

For me, there is no better team anywhere, technically, if this thing is going to work. There was no question in my mind it was going to work. That's why I went to Kistler, because I thought I could help, but they certainly didn't need my limited technical merits to design the K-1.

WRIGHT: I found it interesting that part of the COTS program methodology is to let the commercial partner do the development without a lot of oversight from the NASA team. In the case of Kistler, as you just described, you had years of experience and technical knowledge. Did you, at any time, find that NASA was providing assistance during that time period, or do you feel like your team could pretty much do what they needed to do without any assistance from the COTS team?

BRINKLEY: No, there was a great deal of harmony and good interface in terms of working through the specs [specifications] and the requirements for rendezvous, prox ops [proximity operations], docking, and all of the technical and operational requirements. Valin Thorn, in particular, oversaw that technical interface.

The one thing about it on Kistler's side—even though they certainly could deserve to be arrogant, none of them were. They were much more mature than that. They were very focused on making sure they had everything right. They worked very well with Valin. There was a great relationship on the technical side. There was no angst in any way, shape, or form.

The difficulties we had with Rocketplane Kistler really focused on the financial and the investment side, not on the technical side, not on the operational side. Alan and his guys—Valin,

Bruce—they were great. They worked very closely with Joe, almost on a daily basis back and forth. Everybody wanted to make it work. That's why we got selected to begin with.

WRIGHT: Thanks, I'll turn it back over to Rebecca.

HACKLER: I did have one other question about your work with the COTS team. Can you describe your experiences working with the venture capitalist they brought in, Alan Marty?

BRINKLEY: He was very helpful and really a good guy. He knew his way around, and I think he understood the sensitivity on the financial investor side, and really tried to be able to articulate that within NASA. A lot of these decisions ultimately were made not at Lindenmoyer's level, but at a higher level. It's just not something that within NASA is necessarily well understood. This is very different from a government-funded program, and NASA hadn't done it before.

They were taking a model that [NASA Administrator] Mike [Michael D.] Griffin had been familiar with in DoD [Department of Defense] for providing services for Earth observation photographs and data, so that's the model that NASA tried to follow. The main difference was that there was a servicing contract associated with the investment to build a satellite in the DoD Earth observation financial model. In the case of NASA, those two were separated, and that was the paramount difference.

HACKLER: Did you also have communication with the NASA legal team that was working on COTS?

BRINKLEY: Absolutely. Our lawyer, Ragan [L.] Powers, who is a brilliant lawyer and a great guy, and a dear friend, worked very closely with his counterpart. I felt the discussions there were very professional, and when we worked through the terms and conditions of our Space Act Agreement, I felt the working relationship was very good.

HACKLER: What, for you, was the biggest challenge working on this program in your role at Rocketplane Kistler?

BRINKLEY: Getting the commitment to raise the $500 million. When I first went to Rocketplane Kistler, that was not supposed to be my role, but I ended up doing that as well. I became the lead in that effort. It was a new experience for me, and I certainly learned from it. My experience had not been on Wall Street and road shows, but fortunately Jefferies Quarterdeck put me through a very painful boot camp before we did go on the road show. The quality of our presentation and that sort of thing I don't think was ever an issue. It was never an issue about the capabilities of the management team. The real issue was the financeability and the disconnect with the lack of a follow-on servicing contract.

HACKLER: Since you said that was not your role when you originally joined Kistler, what was your role?

BRINKLEY: My role was not to raise the money. My role was to win the COTS competition, and to lead the team to develop the vehicle, not unlike what I did at the Space Station.

HACKLER: So you were more focused on the technical side at that time?

BRINKLEY: It was like being the Space Station Program Manager. I was in Johnson Space Center or in Baikonur [Cosmodrome, Kazakhstan], making sure all of the modules were being built, stayed on schedule, and they would actually work. My job was not in Washington, DC, to go to Congress to commit to funding. Occasionally I'd have to do it, but that wasn't my full-time role.

I started out focusing on building the vehicle and staying on schedule and cost, and managing like a program manager, but ended up assuming the responsibilities of, in addition to that, going to raise the money.

HACKLER: Do you have any additional thoughts or reflections you'd like to share before we close today?

BRINKLEY: I would say that I'm really happy and pleased to see the success of SpaceX and the recent success of Orbital. At the end of the day, although I'm disappointed about Rocketplane Kistler and the K-1, that's secondary to the fact that COTS has been successful.

We now are in a position to get the Russians off the critical path, at least for cargo, and to be able to take cargo up and bring cargo back with a reliable transportation system, particularly science. We, in the future, should be able to see the opportunity to have breakthrough science associated with the Space Station, which was the purpose to begin with. I'm very pleased to see how things have worked out, and that we've got two providers that have so far been successful in terms of meeting their capabilities to provide cargo to the Space Station.

HACKLER: Thank you very much for sharing all that with us today. We very much appreciate it.

BRINKLEY: It's my pleasure. And I will send you a copy of the letter that I sent to Doc, and you guys will have it as part of the reference. It's very consistent with our discussion.

WRIGHT: We really appreciate your time, Randy. Have a great day. Thank you.

BRINKLEY: Thank you. Thank both of you.

[End of interview]