NASA JOHNSON SPACE CENTER ORAL HISTORY PROJECT
COMMERCIAL CREW & CARGO PROGRAM OFFICE
ORAL HISTORY TRANSCRIPT

MARC G. TIMM
INTERVIEWED BY REBECCA WRIGHT
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WRIGHT: Today is June 12, 2013. This oral history interview is being conducted with Marc Timm at NASA Headquarters in Washington, DC, for the Commercial Crew & Cargo Program Office History Project. Interviewer is Rebecca Wright. Mr. Timm is the Commercial Systems Division Program Executive at NASA Headquarters.

Thanks again for squeezing me into your schedule today. Tell us briefly about your background and how you became involved with the NASA commercial efforts.

TIMM: Sure. Way back in 2005, NASA senior management was looking at how we were going to be resupplying cargo and transporting crew to the International Space Station, post-[Space] Shuttle. The job of developing that program was given to Alan [J.] Lindenmoyer down at the Johnson Space Center, and we had our first meeting on October 5, 2005. Alan convened the meeting. There were probably 12 people in the room. We started with a huge big whiteboard, and Alan started drawing circles about how we can do this, how we can do that, and how we could actually make this successful in a way that we hadn't had the kinds of success previously.

WRIGHT: Tell me, why were you there? What was your capacity?

TIMM: Looking back, this was when ESAS [Exploration Systems Architecture Study] was rolling out the requirements into the rest of NASA. ESAS was the team that was pulled together by [NASA Administrator] Mike [Michael D.] Griffin to look at what the Constellation [Program] architecture ended up being. It was looking at how we were going to move forward as an Agency with transportation systems for crew and cargo.

My role in that was to take the requirements that were coming out of ESAS and roll them into the Exploration Systems Mission Directorate as we were going through our formulation processes. I had the requirements for all of the ISS [International Space Station] cargo, that being one of the major elements of the COTS [Commercial Orbital Transportation Services] effort, so they wanted me to attend from that perspective. I was there as a representative of the ESAS output, looking at how we're going to satisfy the science requirements and transportation requirements that were derived by ESAS.

WRIGHT: So it was truly all new to you as to how this was going to move forward.

TIMM: Actually it was new to everybody. The first meeting, we had no clue how we were going to do it. We had representation from legal, safety, Space Station, NASA Headquarters, and just sat down with a clean whiteboard and said, "How can we do this?" We also knew that we, as NASA, really didn't understand the venture capital markets very well. So Alan hired a venture capitalist named Alan Marty and got him on contract to help us understand what makes commercial entities financeable, and what makes a successful partnership, and also what makes a successful program within NASA.

WRIGHT: Can you recall some of the basic elements? I know it was a clean whiteboard, but what were some of the basic agreements that were shared among the group for what was going to serve as the foundation?

TIMM: The fundamental core data point was we had $500 million. Not a penny more, not a penny less. That's the total amount of money that Mike Griffin was willing to give us for the effort. So the partners had to get through all the DDTE [Design Development Test and Evaluation] and development test and flight for that funding level. We also wanted to maintain the maximum number of partners that we could to ensure competition.

We also wanted to, as a secondary goal, stimulate the United States launch industry market and see if we could help and allow the United States to become more globally competitive in the launch market. Back in the '80s we launched 100 percent of all commercial satellites, and in 2010 we launched zero. So it was an effort to try to recapture the launch competitiveness, and the global competitiveness of the United States launch industry.

We all got together on October 5th, and just started trying to think through, "How can we enable that capability to be built that we could purchase in the future, for those kinds of dollars, and in the kinds of timeframes that we're talking about?" We went through analysis of all of the different kinds of acquisition strategies, "What are the pros and cons?" We did know from talking with industry that things like keeping IP [intellectual property] rights was very important to them, so that they could get financing. Those became very important drivers for how Alan eventually developed the program strategies.

WRIGHT: What were your thoughts of working on this project? Was it something that you had dealt with before, so you had expertise?

TIMM: It was completely new to NASA. When I was working at NASA previously, I left, started a company, and sold it. So I understood a little bit about how it worked. To see NASA embark on a completely new way of doing business was awesome. It was really cool to potentially see if NASA could enable the development of this capability in the schedule and in the cost that we were given.

It was really exciting to see NASA embark on a new way of doing business that could potentially allow the development in the Unites States of commercially-available, globally-competitive launch systems. The first spacecraft and launch vehicle integrated system that we've had since Shuttle. As we saw, we do. We actually have SpaceX [Space Exploration Technologies Corp.] with the Dragon [capsule]. It was the first spacecraft launch vehicle system built in the United States since Shuttle. Everything else had been canceled because of cost and schedule.

WRIGHT: What was your role as the new ideas turned from concepts into reality, and the pieces were put together to solicit folks to respond to the [COTS] Announcement?

TIMM: Basically after the October 5th meeting, I came back and said that I want to be the PE [Program Executive] on this. It was a disruptive innovation, it is a new way of doing business. I got assigned to that, and the role at Headquarters was basically understanding and making sure that we have the programmatics in place, and that we had the overarching requirements in place

from an engineering perspective, from safety perspectives, that would allow Alan's team to effectively administer the program.

Things like compliance with [NASA] 7120 [Space Flight Program and Project Management Requirements], compliance with other NPRs [NASA Procedural Requirements] and NPDs [NASA Policy Directives]. We also did a lot of briefings up on the [Capitol] Hill, and did OMB [Office of Management and Budget] to make sure they understood where we were going, how we were getting there, and what was our plan to get there.

WRIGHT: What was the reception?

TIMM: Generally good. Although there are folks on the Hill who like the program, and there are folks on the Hill who do not like the program. I think that's pretty much like any program. When we were developing the RFI [Request for Information] and the Announcement, I had dual hats there. I was the Headquarters guy, and also the ISS cargo rep [representative] for ESAS output. I was working with Alan's team on both of those aspects. My job as the ESAS requirements management kind of died down after the first few months as we transitioned all the ESAS requirements over to his program. Then I just picked up as the Program Executive with the standard Program Executive functions at NASA Headquarters.

WRIGHT: What were some of the requirements from the ISS that needed to be included in the COTS program?

TIMM: It ended up being total mass per year, the kinds of experiments and research that we wanted to do as an Agency on the International Space Station. Those were times within NASA when we were actually taking stock of our entire research portfolio and redirecting it towards systems development, testing, and evaluation on ISS to allow us to develop those systems necessary for exploration. ESAS scoped our research portfolio down to a point where it was focused heavily on the transportation systems and exploration beyond low-Earth orbit.

WRIGHT: It almost sounds simple, doesn't it?

TIMM: Almost, yes.

WRIGHT: Did you continue your role along with the selection? Were you involved in that? Can you share some of the details of how that progressed forward?

TIMM: Yes. We had the Announcement come out in January of 2006. Between February and June I had to go off and do other stuff, so I wasn't as heavily involved in the first round of selection as I would've loved to have been. Being at Headquarters, you get dragged off to do things every now and then, so between February and August I really wasn't as involved. I got heavily involved three or five days before the [selection] announcement again. That was really exciting. I was involved during the briefings coming back and the team reporting out to NASA Headquarters as we were moving towards selection, and was part of the selection team as we moved forward.

It was really fun and interesting. [Scott J.] "Doc" [Horowitz, Associate Administrator for the Exploration Systems Mission Directorate] actually had each of the partners come up and brief him prior to the selection, which was kind of unusual. It was really kind of interesting to watch the interplay between the potential partners and NASA management part of the selection. I managed the rollout at Headquarters between Headquarters, OMB, the White House, and the Hill. Then the general rollout as well, with the selection being made in August of 2006.

WRIGHT: Can you describe what that means, the rollout?

TIMM: It's just managing the process by which we let Congress know what we selected. Getting them in, briefing them, developing the briefings—allowing OMB, the White House, to know where we are and what we're doing. Keep them up to speed, and then managing the press releases and managing everything associated with making our decision public. We had a press conference downstairs, press releases, briefings up at the Hill, and briefings here in the building with representatives from the Hill.

WRIGHT: Was part of your job working closely with the Public Affairs Office [PAO] as well?

TIMM: Yes. At Headquarters you have to work with Legal, OLIA [Office of Legislative and Intergovernmental Affairs], PAO. All those organizations were involved in rolling the decision out.

WRIGHT: You mentioned you got started, then you got pulled off, and then you got back in. Do you recall what your thoughts were of the progress that had been made in the time that you had sat in those meetings until they had actually put all of this together?

TIMM: It was progressing on schedule and faster than we'd seen anything happen previously. Remember, we had the draft Announcement go out in November or December [2005]. The final went out in January, and we awarded in August. Normal procurements can take years to get through the system, and to be able to do that in that small number of months was just phenomenal. It was really a credit to Alan and the entire team to get through that entire process in that timeframe.

WRIGHT: Were you part of Doc Horowitz's selection committee, that executive committee? Can you share the types of things that were discussed? I'm just curious if there were things that stood out.

TIMM: I'd rather not.

WRIGHT: Okay. Talk about the milestones and why that was an important aspect of the COTS program, why those were set up the way that they were.

TIMM: I guess the first thing to do is step back and say, this is not a NASA DDTE effort. This is not a NASA development effort. Under this program NASA was acting as a highly interested investor. As part of developing the strategies for moving forward, we wanted to make sure we

had understandings that the partners were making progress—financially, programmatically, and technically—and we decided to tie payments to those milestones.

We also decided to use a Space Act Agreement as a partnership mechanism, with the thought that it seemed to be the most appropriate tool to allow our partners to maintain the kinds of intellectual property rights that they wanted, with control of developing the hardware and developing the system. NASA would function as an investor for the development of their systems. Again, from the cargo perspective, the hardware systems all remained within ownership of the companies. All of the intellectual property rights are owned by the companies. NASA is buying services once they're successfully tested.

WRIGHT: It seems like the legal team really had a lot of upfront work to do.

TIMM: They did. We worked with the legal team extensively, both at JSC and NASA Headquarters. They did a fantastic job pulling together the strategies that allowed us to actually implement this. It was a really coordinated effort between the Headquarters and JSC legal teams, and the program office down at JSC.

WRIGHT: Talk about procurement's role in this, because it was certainly not a traditional procurement. I'm thinking procurement had to have at least some buy-in to how this was going to be done.

TIMM: We kept procurement involved completely through the system, and used many of the same processes that procurement would use in a nominal procurement. Though it wasn't a

procurement, they were heavily involved as we stepped through the processes to make sure that everybody knew what was going on.

WRIGHT: It's not procurement, but it's still financial. Maybe it was also the financial offices?

TIMM: Not really the financial. We wanted to make sure that procurement was riding along with us, so that everybody knew what was going on. Technically we didn't really have to involve them, but it was just the right thing to do.

WRIGHT: It's good for everybody to know what's going on in that whole package. I think you've already inferred that there was a lot of communication between Headquarters and JSC, with the program office down there. Can you talk more about what your role was, to facilitate communications?

TIMM: Yes. That was totally different, too. Where in a typical NASA program you would have monthlies and quarterlies and periodic briefings up to Headquarters, we didn't have any of that. I was thought of more as a team member than a guy at Headquarters who you out-briefed periodically. I spoke with Alan and the team on an every-couple-day basis. It was a different kind of Headquarters program, remote program office setup, all the way around. We didn't have formal meetings, we just got together when we needed to. If something happened, I got immediate notification of what was going on at any given time. There wasn't a lot of formal back and forth. It was really a tightly coupled, very small organization, which I think is another key to why they were successful.

WRIGHT: How were you viewed here? If someone wanted information from Headquarters, did they talk to you, or did they go directly to Alan?

TIMM: No, generally contacted me. We set it up between Alan and me. I managed that because I could better understand what's going on here at Headquarters. Again, it helped being up-to-date on a fairly regular basis. We could field questions and field issues relatively quickly, without having to bother the program office. The program wasn't set up to have a large contingent of folks to do that interfacing, so we purposely put together the processes that would allow us to accomplish this with a very small number of people.

WRIGHT: Did you see yourself as a conduit, in a sense?

TIMM: Oh yes.

WRIGHT: If there were questions that were coming from the legislative areas and so forth, did they all come back through you?

TIMM: Correct. Any questions that came in from the Hill or came in from the White House all came through me.

WRIGHT: Were you getting many questions through those early days, or was it somewhat under the radar at that time?

TIMM: People knew about it, but it was viewed as not viable. I think in general it was viewed by NASA as just a bunch of wacky people doing wacky things. We were kind of left alone, which I think was another benefit that allowed us to be successful. By being unencumbered by lots of oversight at program levels and Headquarters levels it allowed us to very quietly do our job, thus allowing our partner to do their job.

WRIGHT: Do you feel like there was a point in time where the view of what the COTS program could produce changed?

TIMM: It started changing slowly over time. The thought went from "This will never work," to as our partners were successful saying, "Yes, they could possibly do it. But they're cutting corners and doing cowboy things, and it's never going to work." Over time, as they've been successful, people have started to understand that it is a viable development model.

There are still people who don't believe it. They believe we did it for the cost, we're doing it for the cost. But the fact that we have a launch vehicle that we enabled, that NASA helped a United States company build a launch vehicle that's globally competitive—I'm not sure if it's true now, but it [SpaceX Falcon] was the cheapest rocket in the world. It's just awesome. To turn around an industry that was actually down to zero is awesome. It's really good. It's great for the country, it's great for NASA, it's great for everybody.

Both on the Hill and in NASA, as we became more successful, as the partner started developing integrated testing and actually started launching and successfully flying, it is more favorably thought of within the Agency.

WRIGHT: When you first started you had one [NASA] Administrator, now you have another. You had one White House administration, now you have another. COTS has survived, and continues to evolve and grow. It's now starting to move towards its closeout. What do you feel has been the view of why it didn't get canceled at some point? Why it was left to continue moving forward?

TIMM: I think because it was under the radar. It was small. It wasn't a huge program, so there weren't large amounts of money dumping in and out of any one district, two districts, or three districts around the country. It eventually provided a need that NASA wanted. Remember, back when we started COTS there was no need for it within NASA. It was only after the Constellation Program canceled the cargo version of the Orion capsule that the primary role of transporting cargo to Space Station was shifted from a NASA-developed system to the COTS systems. I think that was a big turning point, where the partners became the primary systems for transporting cargo to and from Station. That was a big deal, that was a big shift within the Agency.

WRIGHT: How did that impact your work, once that shift had been made?

TIMM: Not much. We had our milestones lined out, we knew we had our plans moving forward. At that point we were starting to go through integration with ISS, the visiting vehicle integration. It really didn't impact our world much at all, that I remember. I didn't really get any additional questions or a lot more reporting upstairs. Just kept trucking along.

WRIGHT: When the ISS produced its requirements document for allowing these visiting vehicles, were you involved in those processes as well?

TIMM: Oh, [Space Station Program (SSP)] 50808? I was not involved in 50808, specifically because that's a Station program and they were going to be doing the integration for visiting vehicles and buying the services, so that's a different organization. We were just responsible for enabling the capability. [SSP] 50808 was based on the work that Alan's team and our team pulled together initially. It became the basis for the development of 50808, but Station's always owned the interface requirements and safety requirements for Station.

WRIGHT: Speaking of safety, you mentioned that out of that first 12 people that were in that room, one was a safety rep. Can you share how the safety aspect has been viewed and/or integrated into the COTS program?

TIMM: Safety is primary. From day one we had a safety representative assigned to Alan's office, the program office down at Johnson Space Center, as well as the safety organization associated with ISS. Each of our partners has to go through the integrated safety system for ISS before they're allowed to fly to the Station. Just like every vehicle that has gone to the Station—[European Space Agency] ATVs [Automated Transfer Vehicles], [Japan Aerospace Exploration Agency] HTVs [H-II Transfer Vehicles], [Russian Federal Space Agency] Progresses [cargo vehicles], [Russian] Soyuz [crew vehicle], and even the Shuttle—had to go through the same processes that our commercial partners have had to go through. It's right up on par with that.

WRIGHT: You're here at Headquarters and the safety person was at JSC—was that safety person connected with the Headquarters safety as well?

TIMM: Yes, that's correct. That continues to this day, and we have a really good working relationship with the safety office [Office of Safety and Mission Assurance] here.

WRIGHT: Do you have a role working with the FAA [Federal Aviation Administration] as they work with your COTS partners?

TIMM: We brought FAA in early as well, as one of the members of the team, knowing that they [the commercial partners] were going to be FAA-licensed. We worked with them initially to establish the processes and roles, not on a day-to-day basis for the cargo operations. Again, once they're successful the operations are managed by ISS. They work with FAA for the missions going to ISS.

For demonstrations we work with FAA for mishap planning and all of that kind of stuff. Not too intense—again, each of the partners is responsible for licensing their system, and only if there are questions that FAA needs from us, we work with them. But they manage it pretty well. I think we have a really good working relationship with the FAA as well. George [C. Nield, FAA Associate Administrator for Commercial Space Transportation] has got a good bunch over there.

WRIGHT: It seems to be very interested and in-tune with what NASA's doing with this whole program.

TIMM: Yes, and they're working with us on new stuff as well, really well. Those relationships are working out really nicely.

WRIGHT: That's good. It makes you feel like it's less of a burden when you get that communication down. Lots of good stuff has come out of the COTS program, but at the beginning, there was a kind of a hiccup when Doc Horowitz had to terminate one of the partners. Can you share?

TIMM: Sure, that was a good one. I actually consider that a win. As I mentioned earlier, remember we had these periodic milestones that we wanted to use to gauge our partners' progress technically, programmatically, and financially. That includes PDRs [Preliminary Design Reviews], engine tests, it includes financing milestones. Financing milestones say, "You've got to bring X number of dollars in, prove to us you have this money in the bank, and then we'll say that milestone's successful."

RpK [Rocketplane Kistler], we saw early in 2007, started getting behind. Started missing some financial milestones. And the financial milestones for RpK were some of the more important milestones for us, because Alan Marty's analysis, and our analysis, was that they would have more potential issues raising capital than would SpaceX. We had more financial milestones to ensure that we had the granularity we needed to understand that they were making progress and funding their system.

They ended up missing some financial milestones and we gave them warnings. When they finally started missing technical milestones because they could not meet the financial milestones, that's when we terminated the system. We terminated the [Space Act] Agreement, because it became apparent to us that they could not get the financing needed to allow them to mature their system and continue maturing their system to meet our needs.

The good thing about that is, because it was an agreement, there were no financial issues associated with that. We just terminated the agreement and didn't pay them anymore. We didn't get the original $32 million back, but we weren't liable for any other funding past the termination. The leftover money from RpK was used to run a second competition, and that's where we picked up our partner Orbital Sciences [Corporation].

WRIGHT: Based on your understanding of how the COTS program worked, did NASA feel that the work that RpK had done should come back to NASA or maybe be used for another partner?

TIMM: We didn't see any benefit in that. It didn't look like that would be a benefit.

WRIGHT: Was that a benefit for that partner? Or just as a whole in the program that if you had to terminate somebody, that was their work?

TIMM: No, as part of the program we actually have rights to their intellectual property should they miss a milestone or should they fail and we have to cancel the Space Act Agreement. We actually do at that point get rights to the IP, and can actually decide whether or not we want to take ownership of that and continue or not. For the COTS program, we waived our rights to any

intellectual property unless they failed in developing the system. Or there was a timeframe, I think 2015, where we could have rights to it. Those are the only two cases where we can get rights to their intellectual property.

WRIGHT: You missed out on Round 1. Were you involved in the Round 2 selection process?

TIMM: Again, part of it. At that time Constellation was ramping up, so I was asked to do the program executive job on that as well. I actually picked up on the Ares I and the Ares V [rockets]. That was just about the intense time when things were really picking up on Ares I and Ares V, so I moved over there for a little while. Alan knew how to run those, and it was pretty straightforward. Again, I didn't come back until right at selection. Then I did the COTS and the Constellation work all at the same time. It was fun.

WRIGHT: Goodness. That must've been an interesting time period for you though, when Constellation was being cancelled and the COTS piece took on a more commanding role.

TIMM: It was also very interesting to see the differences in culture with two programs within NASA. It was kind of interesting to actually watch and live the culture differences as both programs progressed. It was the most dramatic thing I've seen in awhile.

WRIGHT: Since you made that statement, it makes me want to ask about your thoughts of how you see this new culture being applied in future NASA programs, or do you?

TIMM: I think it could make sense to use a partnership where there's a potential future use for NASA, as well as a really definable commercial use that could sustain itself without any NASA work. In those instances where a future NASA capability could help drive a new industry, that could be a potential for a partnership. Not dual use, but where there's a real, definable market that is totally not NASA's. That's one thing we did on COTS. We wanted to make sure we were stimulating commercial launch capabilities that could be globally competitive.

WRIGHT: Do you see other markets that will come from the COTS partnership that will work towards expanding the markets for these partners, and the ones that possibly didn't win?

TIMM: From the COTS perspective, I think having the low-cost launch vehicles can help the satellite industry as well as the launch vehicle industry. As we've had the ITAR [International Traffic in Arms Regulations] issues over the past, we've been losing market share on satellite manufacturing because we did not have a cost-effective way to launch satellites. Satellite production was tending to move offshore.

The fact that we have cost-effective launch now within the United States—or we're getting close to it—you're seeing satellite companies grab new customers that we might not have been able to grab. You can launch them on launch vehicles in the United States that are actually cheaper than other places. I think we have the potential for—and I can't really quantify it—helping out the United States satellite manufacturing industry as well.

WRIGHT: That may be something that has started here that could possibly evolve. Is that what you're thinking of in the future?

TIMM: No, just the fact that we've helped enable cost-effective launches helps the satellite manufacturers build satellites that can be launched on United States vehicles, and not have any ITAR issues with shipping, with trying to launch satellites on Russian, or Chinese, or any other launch vehicles.

WRIGHT: Looking back on your involvement with the COTS program, what are the lessons you feel that NASA has learned from this, and also in your job as program executive? What have you gained?

TIMM: I think the biggest thing I've learned is that—and we learned it early on—you've got to manage the culture. The culture will kill a program. The other thing we learned is that if you take culture from Program A and try to levy that culture on Program B, you stand a pretty good chance of killing that program. There's really good evidence that generally when you try to use existing culture on a new program, you typically will kill the new program.

There are a lot of cases of that in industry. A good example is DEC [Digital Equipment Corporation] computers. They used to make mini-computers, and they were one of the top mini-computer manufacturers in the world. When they wanted to switch from making mini-computers to personal computers, the culture change—the processes, the resources, the values that were used to build mini-computers—were different enough for PCs, personal computers, that it drove the company out of business. You wouldn't think a mini-computer would be much different from a personal computer, but it was enough to kill the company. It doesn't take much difference for a culture to actually take a program down.

One thing Alan did, was there was no culture brought in. It was all zero-based. "What culture do we have to put together to allow this to be successful?" And I think they were very successful in implementing that.

WRIGHT: They were very successful in protecting that culture as well. Do you feel like they had some outside forces that might have wanted them to skew away from that?

TIMM: I think they were successful in part because they didn't have any money. There wasn't funding to allow a bunch of people to help them out. They also were not seen as viable, so we didn't see a lot of NASA people wanting to help out and help us with the current culture. I think they benefited from both sides of that. I think that's the biggest thing that I saw. Alan Marty, the venture capitalist who we brought in, told us how to put the program together and how to build that culture up so that it could be successful.

WRIGHT: So you feel like he was a very vital part.

TIMM: Yes, he was really good. He actually handed out copies of a book for all of us to read [*The Innovator's Dilemma* by Clayton M. Christensen]. It was good. The book actually described how culture kills companies, and how to set your program up so culture won't kill it.

WRIGHT: That's very interesting. Those lessons that you learned, are you able to apply them in other parts of what you're doing for NASA?

TIMM: Sure, yes. At home, with my wife, and here at work. It's really useful and we've been very successful.

WRIGHT: Give me some examples. You mentioned how you were able to share the elements of this culture that needed to be perpetuated, but were understandable for those who weren't accustomed to what you were doing down there.

TIMM: Generally my job was reporting out and up. We reported out and up in very specific ways. Periodically we did have people who would want to start helping and we just told them "No, we don't really need you. If we need you, we'll come ask you." Again, we didn't have much budget. We never had much budget. I think Alan was running three to five percent of total budget with his program office. I think he peaked at 13 people, and to have 13 NASA people help build two launch vehicles and spacecraft is actually fairly impressive.

It was telling people no. It was a lot of helping people understand that this was not a NASA system, this is a partner system. NASA does not own—we're not taking intellectual property rights, we're not taking DD250s [Material Inspection and Receiving Reports], we're not taking ownership of hardware. We're investors in their system, and in the future we would buy services if there was a need that popped up. It was things like we weren't compliant with 7120, which is the NASA program and project management requirements. We actually wrote that in our Formulization Authorization Document that formulated the program.

We said we're going to use the tenets of it, as fit for good management practices. We've even had GAO [Government Accountability Office] and [NASA] IG [Inspector General] come do reports and said that we're doing a fantastic job of following good fundamental program

management tenets. That worked really well, without the burden of all of the processes that complying with 7120 would bring. That kind of thing, I think, is where we deviated from the standard culture for spaceflight development systems. We actually had a very small program office and brought technical experts in as needed to support the milestones and support test product reviews. It was managed in a completely different way.

WRIGHT: You mentioned that you were investing in their system, and then if you needed their services you would purchase it. It wasn't two years after the COTS program got up and underway that the CRS [Commercial Resupply Services] contract was awarded. How were you able to keep people from confusing the COTS program with CRS?

TIMM: At the technical level, at the working level, it was really easy. The COTS guys were focused on the partner development and demonstration, and ISS was focused on visiting vehicle verification. Since ISS really understood visiting vehicle verification, they understood what kinds of things they needed to allow them to accomplish that verification and safety certification before going to ISS. Alan Lindenmoyer and Kathy [Kathryn L.] Lueders worked together to make sure that they had a really good, fantastic, seamless team that could transition as needed. We also had shared quarterlies. It was as combined as we could, with everybody understanding who had what roles and responsibilities. That seemed to work really well.

WRIGHT: More of a team effort?

TIMM: Yes, and I have to give credit to Alan and Kathy on that. The combination of the two really pulled this off, really made it successful. I don't know if you could've put anybody else other than Alan and Kathy in those positions and had it be successful.

WRIGHT: Have you had much interaction with the partners themselves, or is your interaction mostly with the NASA personnel?

TIMM: Yes, I interact with the partners quite a bit. It tends to be more at the higher level than at the working troop level. Although I did used to get emails at two in the morning, "Give me a call when you get in." It's, again, that communication flow, and that communication flow goes all the way up and down through everybody. We try for everybody on the team to know everything they can, so that nothing pops up and there are no surprises. That's easy with a team of four or five or six. It's hard with a team of thousands.

WRIGHT: Sure. More shared information rather than trickle down. Where is your role now, and how is your role going to change as the program office starts moving towards closing out?

TIMM: I guess a good way to describe it is with SpaceX. As SpaceX finished their last demonstration mission going to the International Space Station, the next flight was ISS. It was a step function. We no longer worked that. We work closely with the ISS guys up here, because we have the knowledge and help them out as much as they can. The ISS guys sit all around us, so we work with them really closely as well. But it's an ISS function. Once Orbital finishes

their demonstration, it'll be an ISS function after that. Then we'll go on and do new things on the cargo side.

WRIGHT: So the cargo side is going to continue functioning?

TIMM: Yes. We're doing crew stuff too—that's not part of the cargo. We're continually managing that as well, that's the same type of effort. We will see what the Agency wants to do with partnerships, how we want to progress with partnerships, what senior management would like to do, and implement that as best we can. I think there's a lot of benefit to the partnerships. I think there are benefits not only to NASA, but there are benefits to the country, which is just awesome to me. If we can be globally competitive and we can actually capture additional market share, it's just a total win for the country.

WRIGHT: Yes, it is. Are there other areas you feel like we haven't discussed that have come to mind, over your long time in this role? It seems like a long time, but I'm sure it was very compressed and busy.

TIMM: Let's see. It was a blast, it's the funnest thing I've done at NASA for a long time. To have the potential impact that I think we're going to have on the country is pretty cool. It's very rare to go through the entire development of a system like that. As I mentioned, Shuttle was the last time we've had any major developments of spacecraft and launch vehicles. And to be able to go through two of those, to flight, is just awesome. It's just really, really great. The benefits to NASA and the side benefits to the United States are great. It's just really cool. Both SpaceX

and Orbital Sciences have some great engineers working. They have great teams, and they're going to go do great things. I was happy that NASA could help out with that in some small way.

WRIGHT: In all investments, there's always that question of return on investment. So you believe that this has been a good investment not only for NASA, but for the country as a whole?

TIMM: Oh yes. If you just take a look at SpaceX—I think they have like 40 or 50 launches on their manifest now. Those would be 40 or 50 launches that would be going to China, or Russia, or India, or Europe. That's something. I think NASA has 12 flights of that 40, so there's 30-some-odd flights that would not be flown out of this country if not for what we've helped with.

WRIGHT: Speaking of launch services, were you involved with the Mid-Atlantic Regional Spaceport operations as well?

TIMM: Yes. They own the pad out at Wallops [Island, Virginia], and they are the primary launch site for Orbital Sciences. It's a state of Virginia-owned and -operated launch pad. I think they have some other launch pads out at Wallops as well. This is the largest that they've done. It's been a really fantastic few years watching it all come together, because when they started the pad, it was just sand. Literally. SpaceX flew off Pad 40 [Cape Canaveral, Florida], which has been around for awhile, but this is a brand new pad that started on the sand. To see that come together has been pretty wild as well.

WRIGHT: Were you involved in that from an official capacity here?

TIMM: Not really. Again, it was the state of Virginia's responsibility to build it. We tracked it and just monitored it. Orbital Sciences was their customer. The Wallops range involvement included range-type functions. At Headquarters we just monitored, kept up with it and tracked any issues, and how things were moving forward. They had some issues, but it's working good.

WRIGHT: You mentioned it was fun. I do want to close out by asking you, what do you consider to be the most challenging aspect of working this new program?

TIMM: I think the most challenging aspect is managing expectations and managing culture. There's a huge propensity within the Agency to do things in ways that we know, which is normal for any organization. The Agency has to have the courage to step back and say, "No, let's take this out of the old way, the current way we do business, and let's do it a different way." I think the more we can do that in the future, the more successful we'll be. The culture will tend to want to kill it, but that takes management from the top down, as well as the bottom up. You have to have the 9th floor [top management] involvement and support all the way down.

WRIGHT: Through these years, even though players have changed, the support has continued to be there?

TIMM: Yes, we've always had tremendous support out of the White House and OSTP [Office of Science and Technology Policy], up through the 9th floor. We've always had really fantastic support, and it's been growing as we've been successful. There were tons and tons of doubters

within NASA that said this just can't be done. I'm glad for the country that we've proven them wrong. I think it's good for the country.

WRIGHT: We look forward to see what's coming next. It'll stay busy, I'm sure.

TIMM: Yes, it's going to be fun, and we'll be busy for awhile. It has just been a really fun and exciting little program.

WRIGHT: All right, thanks.

[End of interview]