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

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INTERVIEWED BY REBECCA HACKLER
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HACKLER: Today is March 19, 2013. This oral history interview is being conducted with Sumara Thompson-King, Courtney Graham, and Karen Reilley at NASA Headquarters in Washington, DC for the Commercial Crew & Cargo Program Office History Project. The interviewers are Rebecca Hackler and Rebecca Wright.

These three attorneys for the space agency were involved with the establishment of the COTS [Commercial Orbital Transportation Services] program, and using funded SAAs [Space Act Agreements] for the first time to help NASA encourage commercial services. We'd like to ask you, Sumara, when you first heard about this plan to work with commercial companies using NASA's Other Transaction Authority, and how you went about making that possible from a legal standpoint.

THOMPSON-KING: I first heard about it when our then Administrator, Michael [D.] Griffin, proposed that we use our Space Act Agreement authority to see, "How can we do it? Let's use it." We had this Other Transaction Authority. He had heard from industry that there were concerns about using our traditional acquisition method of contracts, grants, or cooperative agreements. He wanted us to look at another way of working with industry, encouraging industry. How could we do that? He didn't have a specific plan other than, "Look at something different."

What we had available to us are these two words, "other transactions." In the [National Aeronautics and] Space Act of 1958, which was in place at that time—and I remember that section very well, section 203—it identified NASA's authority "to enter into [and perform such] contracts, leases, cooperative agreements, or other transactions" to perform our responsibilities. What did that mean? There was no guidance.

We'd also had conversations with Mr. [Paul G.] Dembling. He spoke to NASA on many occasions. There's an interview that might be in one of the history offices where he talked about how that language was drafted. There's really no guidance about what was meant by "other transactions." It was meant to give us flexibility. We were now tasked with using that language and being as flexible as we could.

What guided us was the fact that even though the Space Act gave us that authority, we had to comply with other statutes that were also in effect at that time. Primarily in the contracts area, it was the Competition in Contracting Act [of 1984]. Whatever we did using our Other Transaction Authority could not supersede the Competition in Contracting Act, nor could our actions supersede what was required of us in terms of fiscal law and appropriations law. We had to comply with the Purpose Statute [31 USC § 1301]. All of those laws, whatever we did, we had to comply with those types of activities. That was how we got started.

HACKLER: We understand that [Contract] Procurement [and Law Practice] and the [Commercial and] Intellectual Property [Law Practice] Groups also had a lot to do with how that Space Act Agreement was put together. Do you have any input, Karen and Courtney?

REILLEY: The Intellectual Property is Courtney's area, but we definitely had a lot of concerns there. Going back to the basic premise that this really is a partnership, and it's working with commercial activities to help them further their own development activities—which is quite different than we would normally have in a government contract, where a company is doing work for the government. You had to keep that premise in mind up-front when you're thinking about how you would allocate any intellectual property rights.

Then what existing provisions or—I hate to say "contractual terms" because that makes you think of procurement—what you would put on paper to actually implement how to allocate those property rights. Does that run against any of the other government-wide statutes, such as the Bayh-Dole Act [Patent and Trademark Law Amendments Act of 1980] or anything else like that, that we still have to work within?

GRAHAM: One of the things that I wanted to point out, too, is that I'm not sure it's quite accurate to say that this is the first time that NASA has provided funds under our Other Transaction Authority. This is the first time we used this particular transaction structure to stimulate the development of a commercial capability, but the Agency does have a history of using something called Joint Sponsored Research Agreements [JRSA], which is a form of Other Transaction where NASA would provide money to a partner to support cooperative research activity.

Unlike that situation, this is where NASA is essentially acting as an arm's-length investor to stimulate the development of that capability, rather than working jointly with someone on something that's of mutual interest to both parties. One of the things that I do caution people on is that we don't know what a funded Space Act Agreement might look like in five years. It

depends on what the Agency is interested in doing and what our leadership asks us to see what we can find to do. That's why the Other Transaction Authority is so very flexible.

The particular areas on the IP [intellectual property] side that we had to deal with have to do with the fact that Space Act contains provisions dealing with the protection of proprietary data that's created under Space Act Agreements, and how that data is managed in the hands of the Agency. NASA is a title-taking agency under the Space Act, which means that NASA takes title to any inventions that are created using NASA funds, facility, or property. In most of our partnerships we make a determination that that title-taking requirement doesn't apply. However, in this case, there was a determination made by our head of Intellectual Property at the time, Gary [G.] Borda, that that title-taking authority did apply.

That was a topic of a lot of discussion between the JSC legal office and the Headquarters legal office. They were very vociferous. You might follow up with one of the IP attorneys down at JSC to talk to you about that discussion, if you want the background. I wasn't here for that, but I've read all the emails because they sent them to me because we continue to revisit the issue. The determination was made that NASA was required to take title, which means that the partners have to request a waiver in advance of any invention of NASA title-taking authority in those inventions. That's something that is now kind of accepted by the partners as a matter of course, but at the time it was very, very controversial.

NASA also gets rights in data under the agreements. The way we handle that is that we refrain from exercising those rights for a period of—

REILLEY: Often about five years. It can vary.

GRAHAM: I think it may have even been 20 years under COTS.

REILLEY: That's right, we made it longer.

GRAHAM: We even cut it down for the Commercial Crew Program. Essentially, when NASA is legally required to take rights, we're not legally required to exercise those rights. So we're able to give the partners the commercial certainty that NASA won't be releasing that information to the public.

REILLEY: I think this was particularly important in working on COTS. As you mentioned, there may have been five or six other projects where we have used a Space Act Agreement of one sort or another—transferred funding, working with partners—all with their own flavor. In some of those prior ones we had gone through the same sort of analysis. The title-taking authority had always been there. It was, as I recall, more of an issue with COTS because of the particular nature of the COTS project.

Some of the other projects had been, as Courtney said, more collaborative, more advancing the overall state of technology in a certain field. Not as much focused on a particular company's development. So the title-taking and the data rights became amplified when you're talking about a particular company's commercial development, rather than some of those prior funded agreements we had done where even industry didn't seem to have as much expectation going into it. It was really advancing particular systems rather than general state-of-the-art.

GRAHAM: Right, and the partners that we had in those earlier agreements, too, tended to be more traditional government contractors, so they may have had a different expectation than someone who was solely commercial-focused.

I think that the other thing that amplified it for COTS, especially for the IP, was the fact that COTS went from initial development through demonstration under a single instrument. Unlike our Commercial Crew Program, which has actually been phased. You'll have a period of time where you're working on basic concepts, and then you're working on systems, and then you're working on the spacecraft, until you finally get to something that might take you a little bit further. Each of those little pieces isn't quite as onerous as the entire system being developed under a single instrument.

HACKLER: We also understand that in the use of the Space Act Agreement, you had to defend that choice in front of Congress and the GAO [Government Accountability Office]. Can you talk about those experiences, and how you showed that a Space Act Agreement was needed in this case, as opposed to a contract or one of the other means you use to cooperate with outside groups?

THOMPSON-KING: I'll start, but I'm going to back it up and talk about—before you talk about Congress—how we had to explain that to the people inside the Agency. Going back to a point that Courtney made about our Other Transaction Authority and our flexibility, we had used it in various ways around the Agency.

I don't know that we had any documentation to say, "Here's our practice for using Other Transaction Authority, here's how we should use it across the Agency." We didn't have that

guidance, so each center was using it, or not using it, and they were doing it as they saw fit. There were, I would say, probably 9 or 10 different interpretations about how to use it, but people were very careful. I think they were careful about how they used it, because they were mindful of other laws that we had to comply with.

One of the big issues that Karen, [D.] Eve [Lyon], and I, and the attorneys down at Johnson—Amy [V. Xenofos], and Jon [Jonathan A.] Arena was there at the time—had was to explain to people that Other Transaction was not open-ended and unfettered ability to do whatever we want, use it in whatever way we wanted to use it. We had to have a clear purpose. We had to have a fair process for how we were going to use it, because if we had to defend this outside the Agency we all needed to be of one mind on how we were going to use this going forward. So then when we talked to folks outside the Agency—whether it was industry who was interested in competing for those resources or getting the award, whether it was Congress, or the public, or even in litigation—we needed to have a solid, clear story that we were all supporting.

The first thing that we had to make clear with folks was that we were not buying something for the benefit of the government. There's something called the Chiles Act [Federal Grant and Cooperative Agreement Act of 1977], which tells us what is the appropriate legal instrument to use for the activity we're carrying out, and we have to comply with that. If we're buying something that's for NASA's benefit, which NASA needs—buying a [Space] Shuttle, where we are going to manage the program and we are going to go into low-Earth orbit—we need to have a contract for that. But if our purpose is to stimulate industry, to stimulate activity in the commercial sector, that's something different. We don't have to use a contract for that. That's not for NASA's needs.

We had to make sure that the program understood that was what would allow us to use our Other Transaction Authority. That was challenging. We had lots of discussions about the IP issues, we had tremendous discussions about what the purpose was of this activity. We were going, as Courtney indicated, from development to demo [demonstration]. We cautioned folks, "This really shouldn't be an activity where we're trying to get something for the benefit of NASA. When we get to that point, we're going to have to use a contract."

There was a concept, and we said this in the first COTS Announcement, that this is Phase 1. We're going out with this Announcement to stimulate industry. Then when we have a need for the government that needs to be filled, we plan to issue a solicitation that will result in the award of a contract, because we'll be getting services for the benefit of the government.

As we then laid our approach for how we were going to accomplish this, we had to get folks on board with the notion that it really is a good thing to have a process. Write out what the rules are, clearly communicate those rules within the Agency, agree to it, and then communicate it to the folks who are going to compete. We borrowed a lot from our experience with contracts.

The first thing that we borrowed was that competition is good, and we need to be fair. That was, frankly, I think, our guiding principle through the development of the procedures for how we conducted the COTS competition. There was competition, and we laid out what our plans were for proceeding. We stressed to them that this was helpful to us, internal to the Agency, to make a good decision. It also would help us if we ever did get into litigation or had to go outside and explain. Let's show folks, "Here's our plan for how we're going to do this." Here's some things familiar to you from the procurement world. Competition, here is a solicitation.

But we didn't use procurement terms because we wanted to make sure that this was not subject to any procurement regulations. We don't call it an RFP [Request for Proposal], which is a term found in the Federal Acquisition Regulation. We called it an Announcement. We did not call the person who managed this effort a contracting officer. It's an agreements officer. We wanted to make sure there was a split, and the people who worked on this—even though they had procurement backgrounds, this was a different type of arrangement, and we made sure that we kept those folks separated.

So by the time we had to explain this to folks external to the Agency, we had a very clear process that was supported by those in the Agency who understood what our purpose was. Every once in awhile we'd have to remind people and bring them back in line, but basically that was the process we followed. Then there were some challenges. Karen, I can continue talking or I can let you share your thoughts about the challenges.

REILLEY: Sure. I got to work on both of them. The good segue from what Sumara was just saying is that not only did we need to come up with a process, educate ourselves and the rest of our own internal community, but document that. We made sure that we had a good record, literally on paper, of the decision-making process that we had gone through. Things that we had considered, why we were doing this, what we hoped to achieve by it, what our relationship with industry would be, what this was not.

That became important not just for our own internal planning process, but some of that also became invaluable when we did have two challenges at the GAO on these funded Space Act Agreements. On the original one that we did, and then we competed about a year later on the second one [after the October 2007 termination of the Space Act Agreement with

RocketplaneKistler]. Both of those successful, fortunately, but a large part of why we were successful on those protests was because we did have not only a rationale and a process, but the contemporaneous documentation to show that we weren't explaining what we did after the fact. We had the record to back that up, and that became very, very helpful. They actually quoted that in some of the GAO decisions.

HACKLER: Can you talk a little bit more in detail about those two GAO cases?

REILLEY: Sure. The first one, that was the Exploration Partners [LLC] case. That was filed after we had made the award of the funded Space Act Agreements. The main point of that case was whether GAO had the jurisdiction to hear a case like that or not, since it was not a contract. The main point coming out of that decision was GAO saying that we really do not think that we have jurisdiction to hear this, because this is not a contract. Therefore, we, GAO, are not going to opine on whether the Agency did or did not use this appropriately.

The door that was left open was if it was a protest of whether they had used the authority appropriately or not, whether it should have been a contract—that would have been within GAO's jurisdiction. For the Exploration protest, it was too late for that. The decision had long since been made, the process had been gone through, and the award had been made.

The second time, the protest happened before we had made the awards. That was the RocketplaneKistler protest, RpK. That protest actually was about whether we were using the correct type of authority, whether this really should have been a procurement with a contract or a Space Act Agreement was acceptable. That's where it was particularly useful that we had all that documentation going back not only through that round of the COTS competition, but back to

the original COTS competition a year or so prior explaining that process that Sumara was just telling you about. That was our saving grace in winning that protest, being able to show that record of how we had made the decision.

HACKLER: Thank you. That was a very thorough, clarifying explanation. Putting together these Space Act Agreements, you also worked with the commercial companies. Were there any specific inputs you got from them on how to make the Space Act Agreements friendlier for their use?

THOMPSON-KING: Yes. I'm doing this from memory, but we had a process where we did release a draft of what we were thinking about doing. This was the first time we'd done this on such a large scale. As in the procurement world, we released draft RFPs so we could get input and also give some early indication to industry of how they should be planning to develop their proposal that they're going to submit. We did some similar things with industry under the COTS competition. I believe we released a draft, we received comments, and then we incorporated those comments into the document that became the final Announcement.

GRAHAM: That became the final Announcement. I think we probably had an industry day, although I don't particularly recall. I'm assuming we must have. When we issued the Announcement to get proposals for the competition, it had the draft of the Space Act Agreement. It was what we had put together as sort of our final model of it. We also left open the opportunity for each company that submitted their own proposal to also comment on the terms

and conditions that we had in that model Space Act Agreement. It didn't have to be word-for-word exactly what we put in that model, there was some room for negotiation.

And we did have extensive negotiation with a number of companies. With some companies, surprisingly not all that much. Other companies, days of discussing with them, down to commas and semicolons, as well as the big terms in there on what the particular terms of the Space Act Agreement should be. Leaving open the possibility that it could vary a little bit from company to company as well. If someone had a particularly compelling rationale based on their particular approach, we were certainly open to hearing that. I'd say probably more of the negotiation happened once we had potential competitors who wanted to talk specifics about the agreement.

As I remember, we got more feedback—or maybe I just remember that because I remember sitting at the table for days with the particular companies, negotiating with each one. We got a lot of very good input there, which obviously was helpful for that competition, but it also gave us other things to think about when we did the second round of COTS. We've since gone on to do other funded Space Act Agreement projects, and we've built each time on some of the comments we got back from industry.

THOMPSON-KING: I apologize, because my email from this time has disappeared. One of the things I'm recalling are the numerous conversations that we had—we the lawyers, we the procurement folks here at Headquarters—because a lot of this activity was going on down at JSC. The procurement folks and the legal folks down there were encouraging our program folks to talk with industry, and we know they were talking with industry.

At that time it was very interesting because we had two different industries that were communicating with NASA and sharing their thoughts with us. That was the traditional industry, the large companies who had been in the space business for years—[The] Boeing [Company], Lockheed [Martin]—and then you had the new companies. "This company called Space Exploration [Technologies Corp. (SpaceX)]. What exactly have they done?"

You had people pulling at us in different directions about how we were going to issue this Announcement. What was going to be the focus of it, how were we going to evaluate the proposals that came in. There was a lot of informal industry communication with the program. We would hear about it because folks would contact us and ask us questions about how we were developing our evaluation plan, our process for how we were going to evaluate those contracts. There was a lot of industry interaction. Probably more so with the folks who were in the program office, and there was definitely input. We assessed that input, but we ultimately, in the Agency, made our own decision about how we were going to proceed.

GRAHAM: I was going to make two points. It was during COTS that we also came up with the idea of continuing to work on an unfunded basis with unsuccessful proposers. As part of the overall purpose of the program being to support the development of commercial capability, even if someone didn't get a money award, they could still leverage NASA's technical expertise and work with us. And we've carried that forward to our Commercial Crew Program now. Some of those folks went forward, a lot of them fell off the table.

The other point I was going to make was that even though we went through this process of developing and negotiating the agreement, the relationships continued to evolve. Each of those agreements got amended or modified several times as the relationship changed, or different

aspects of the relationship became important to address, that sort of thing. The agreements were not static, even once they were negotiated.

THOMPSON-KING: Let me make a point about the point Courtney made, which is really very unique and probably something folks will really talk about. It was a novel concept to go out with a competition, select folks who were going to receive funding, and then select entities that weren't going to receive funding, but who were going to have a relationship with NASA. We had a number of robust conversations about just that. We had not done that before, because if you think about the contracting activities that the Agency had engaged in, you issue a solicitation, you get proposals in, basically somebody wins and somebody loses. You may have multiple awardees, but you don't have somebody else who continues having a relationship with NASA.

Having these unfunded agreements was really something new and different, and we talked a long time about how you select those folks, how you treat them fairly. Do we have the resources in the Agency where we're going to be working with what ended up being two companies that were selected for funding? Do we have enough people who can work with those two companies and then support the activities of those who had unfunded agreements with us? We ultimately decided to do so.

There was a lot of robust conversation, and as I'm recalling, Alan Lindenmoyer was the lead on this. He was insistent that was something that was very important to him, because remember what we said in the beginning. This is to stimulate industry, so having those unfunded agreements would keep those folks in the game. They may not be as advanced as those who

were selected for funded opportunities in their approach, but we wanted to keep them interested and wanted to support their efforts. That's why those unfunded agreements were important.

HACKLER: How did you cooperate with your colleagues at JSC, both on the legal side and with the program office that was managing it? How did you divvy up responsibilities, and do what was best to stimulate these commercial industries?

THOMPSON-KING: At that time, I was head of the contracts division here, and I had one attorney here at Headquarters, Eve Lyon. What we typically would do was our office would provide legal advice to the procurement office here at Headquarters. We depended on the procurement office at Headquarters to work with the center folks. Then we had a kind of dotted line, we the legal office here at Headquarters to the legal office at JSC.

We took that model and applied it to the COTS process. Eve Lyon was assigned to be the principal attorney here at Headquarters who worked the day-to-day issues that would come up. Down at the Center was Amy Voight—this was before she married—and Jon Arena was also there, they were the two primaries. Karen Reilley was also there. We had other attorneys who would come in and out. Scott Barber I think was in Exploration [Systems Mission Directorate], ESMD, as lead counsel. Bill [William J.] Bierbower—

REILLEY: I actually ended up being on both sides [Headquarters and JSC], but for the first round I was here, and we had quite a team here. There was a group that would go down the hallway whenever we had a meeting, because Eve was coordinating it. Bill was leading a lot of the effort

because he was the lead counsel in Exploration at the time. That would've been when I was in the CFO's [Chief Financial Officer] office.

That was how I was brought into it, because I did a lot of the fiscal stuff. I was in the procurement group here but had done many, many years of Space Act Agreements at other centers. We had the IP folks here, we had Gary, we had property people, and we even had some of our personnel lawyers as I remember. It really was a very collaborative effort there.

THOMPSON-KING: Yes.

REILLEY: The short answer to how you interact with the field centers, having been on both ends of it—lots and lots of having your head glued to the phone. You just continually talk to each other. I found that when we did the second round of COTS, and I was the field center attorney at Houston at that point. It was the same sort of relationship. You are just constantly talking about the day-to-day issues that come up. Same with your program, you live with the program to make sure that they're getting the support that they need.

THOMPSON-KING: Frankly, we were a very good team. What I think I remember most is that people put their egos at the door. We all shared information, the lawyers at Headquarters and lawyers at the Center. There's always a challenge in the relationship between Center attorneys and Headquarters attorneys, because they're supporting the folks down there.

Sometimes there are discussions that the program wants to have just at the center and not include Headquarters in, so I respect the actions of the JSC attorneys in making those judgment calls when they needed to bring us in, and when "We don't quite need your help at this point."

Overall I think it worked out very well. I think also there was a similar-type of activity with the procurement folks who were in office at JSC who were assigned to work this. The coordination that they had with the procurement office here at Headquarters.

REILLEY: I think the involvement of the procurement personnel was very helpful because even though we were very clear that this was not a contract, it's not procurement, this staff has a background and an expertise in the process, in the competition, and in interacting with industry. It gave a good foundation to model off of for the COTS competition. We always try to find that balance of "Don't go down the path as if this is indeed a procurement, but use what you can of that model." It gives you some good things to work with, and it gives you people who are used to working in a competitive atmosphere.

THOMPSON-KING: As Karen said, the thing that I will forever remember on COTS is before we had the work from anywhere—it was Christmas. My family is in Texas, and I remember being in my cousin's living room on the phone with the folks at JSC talking with them about this. We were struggling about getting the Announcement out, and what was going to be in it. We had one telephone call in the morning, and we had one in the afternoon. As Karen said, it was constant communication with them through the holidays. I don't think anybody really took a day off. Even if you were off, you were on call, and everybody participated. That was not just the attorneys, but the folks from the procurement office, the program folks. It was a very busy time, very, very busy.

WRIGHT: If I could ask—it's not like this was the only thing that all of you had to do. What was the push? What was the mandate that you had been given about why this needed to go through so quickly, even through the holidays? Why was this such a priority?

THOMPSON-KING: We had a gap of when we were going to have our own vehicle available to go to the Space Station.

GRAHAM: We knew that the Shuttle was going to retire in 2010, and we were looking at a 2012 date, I think, for Constellation [Ares rocket and Orion Crew Exploration Vehicle] at that point. This was in 2005, with the award in 2006. The perceived need was to get people started so that we would have them online by 2010, which didn't work anyway.

WRIGHT: Your understanding was that this was a necessity to help provide supplies to the Station?

GRAHAM: Yes.

THOMPSON-KING: Ultimately. Because the first part of this was to stimulate commercial industry, so there would be that capacity and an available resource. We were then going to buy that. In order for us to have something to buy, we needed to get it developed and demonstrated. That was the driving force.

GRAHAM: That's why it's so hard for people to get their mind around this idea of having a clearly articulated purpose for this, that was something other than acquiring a service for NASA. And we still have that conversation with people. I just had a conversation a month ago with someone explaining funded Space Act Agreements and what they were for. They were like, "That doesn't make any sense." I'm like, "Well, it actually does."

This idea that there could be something that NASA needs, but that we're using an instrument that's not directed towards meeting that need, creates a lot of cognitive dissonance for people. They want to bring those requirements into that relationship, even though that's not the appropriate place for them to be. You need to transition to a contract in order to bring those requirements online.

Even though there was this idea that NASA eventually needed the capability, that need was not being addressed by this instrument. However, we wanted to be in a position to support the development of the capability, so that they would be there to compete for a contract when we needed to make that award. Because it wouldn't do any good to put out a solicitation for cargo services if nobody can provide them.

THOMPSON-KING: And there was a true need. Not just for NASA, but for the commercial sector. Because we didn't view COTS as just supporting NASA. It was to develop a commercial sector so that others could use those services. We thought that there would be other entities, both in the government and in the commercial sector, that would use those services.

I know that was hard for some folks to imagine, because they said, "No, you're really just doing this for NASA." No, we weren't, because we had a Vision, and it was clear that there were going to be some opportunities for these companies to provide services to the commercial

sector. I think we're seeing that now, when you look at the manifest that SpaceX has planned for their launches.

GRAHAM: That goes to Karen's point about having that documented in the record, in advance and not after the fact. Because it's a discussion we still have with people today. They're like, "Oh, we all know that we did COTS for NASA," wink-wink type of thing. No, we really didn't. We have an established record that showed what the purpose of the activity was and how it was different from what you would do under a contract. Trying to get people to understand that this wasn't just something that somebody woke up and decided to do, and it's an Other Transaction and you can just go do it—people don't really understand the amount of work that went into navigating the challenges that it presented.

HACKLER: Since we're on the topic of the follow-on procurement to COTS, the Commercial Resupply Services [CRS] contract was awarded in December 2008. What was y'all's involvement in that, if any? Were there any challenges to it?

REILLEY: Yes, we were all very involved in doing that as well. Actually, I was the lead attorney on it at JSC, and Eve was the attorney here. Eve and I spoke together all of the time on that project. That was actually a procurement, that was a contract. You're now following the CICA [Competition in Contracting Act] rules, you're now following the normal procurement approach.

That in and of itself was a challenge to work with, because you're working with a lot of the same NASA organizations and programs that, as Courtney said, have just gotten their head around the COTS model. Now you have to re-vector them a little bit to say that what you're

planning to do for a Commercial Resupply is actually a procurement, and you will need to use the procurement process, and you will need to keep it separate from the ongoing Space Act Agreements that had been awarded and were in progress and being implemented.

You may have many of the same industry people interested in both. Those who are participating in COTS with funded or unfunded Space Act Agreements, and industry that is not participating in it but might like to compete for the contract, which needs to be open to everybody. How do you plan your procurement, taking into account what you're doing, without building your competition around what your Space Act Agreement partners are doing? How do you keep it actually an open competition, not built on particular partners' progress in the Space Act Agreement? Even keeping your people separate, so you can have two different activities going on at the same time without having any conflicts or information problems.

We also ended up doing the CRS contract several years earlier than we had originally anticipated. We had originally thought that most of the development and demonstration type of activity that industry would be doing under the COTS program would have been, if not completed, significantly further along. That was part of the whole premise of COTS, that it was the development stage, and then we'll see what happens. Hopefully industry will have come up with capabilities and we'll be able to initiate procurement because there's now a market for it.

As it turned out, when you start looking at the enormously complicated effort it takes to actually put together and launch a spacecraft, and plan for the services, and do the planning that you need to do for any ISS [International Space Station] mission, that takes quite awhile. We needed to think of how far we needed to back up, starting that procurement. Again, not tied to what the COTS partners are doing. Some may or may not have preferred that we had done that further along, but you had to look at when is the optimal time to start your procurement planning

so that you get what you need at the end result. That accelerated our planning on that project by a couple of years at least.

THOMPSON-KING: Karen gave an excellent description of what we thought about. The challenge for us, that we recognized, was that when we moved up the date for CRS, some folks were going to have the impression that, "Oh, what you're really doing is turning COTS into a procurement. That's the wink-wink." We had a tremendous task in making sure that the COTS effort stayed separate from the CRS effort. People, language, resources—we put up a firewall of sorts to make sure that, as much as we could within the Agency and external to the Agency, they were viewed as different processes.

They were, but that was very much an issue in the beginning. There were a lot of us, including me, who were very concerned that to those outside the Agency—and we talked about this with Gerst [William H. Gerstenmaier, Associate Administrator for Space Operations Mission Directorate] at that time. You may give the impression, by starting this early, that you're really using COTS dollars to fund the contract effort. You're going to have some people out there who are going to challenge us and say that we're blending the two, that they're one and the same. That was very much a challenge for everybody who was involved in the process at the time.

GRAHAM: Do you want to talk about the protest that you got on CRS?

THOMPSON-KING: Yes, I was going to mention that if Karen didn't. We did have a protest, and Karen's recollection is probably a little better than mine. CRS was protested to the GAO, which

it could be because it was procurement. Vincent [A.] Salgado at the time was the lead attorney who handled protests when they went to the GAO. We were challenged on the award of that procurement.

REILLEY: It was a company that had submitted an offer, and had not been accepted, and protested the decision.

THOMPSON-KING: Yes. For us, the significant issue was not so much the protest, but the override decision that we made. That was the big issue there. So what is an override decision? In the statute regarding protest, once a protest is filed, at the time they protest agencies are required to suspend performance and any activities on that acquisition. It's called the "automatic stay." You stop all activity, it halts the process. Folks in the program offices hate protests, because of that automatic suspension. We have to cease activities and we just focus on the protest.

GAO has to issue a decision 100 days after the protest has filed. It's a short period, but if you're in a program on a very tight schedule, three months is a long time. There is a provision in statute that allows an agency to make a decision to override that requirement to suspend performance. GAO has no oversight or overview of that decision. The company can't then go to GAO and say, "We think the agency is wrong in issuing this override." However, the company can challenge in federal court.

NASA was looking at the schedule, and Karen articulated so well why it was important for us to push CRS forward. We needed to keep it going. We had a schedule to meet, we needed to get to the ISS by a particular time. There was concern about whether, if we did not have

launch occur by a particular date, we could get supplies up to those astronauts who were on ISS. We carry water up there, we carry food. It wasn't just research. It was really sustaining the life of those on the Space Station and continuing the program.

Bill Gerstenmaier made the decision that he wanted to override the suspension, so we had to draft a justification in the agency explaining why we believed that was necessary. Mr. Gerstenmaier may remember this a little differently than I did. I remember Bill thought, "Okay, we'll get this done in a couple of days." I think when we look back, it took us about 20 to 30 days to write it, because we knew that what we wrote in that document was going to go to a judge who was outside the Agency. We had to really lay out our internal deliberations, our thought process, and what the basis was for the decision.

This was not a two-paragraph document. Frankly, many program folks were really of the opinion that we could tell NASA's whole story in two paragraphs. We, the lawyers, really had to work with them to explain, "No, you've got to tell your story fully. You've got to show how you deliberated, how you weighed things, and how you ultimately reached the decision you made." That's not going to be in two paragraphs. You have to make sure that the facts that you articulate in this document can be supported.

That's why what Karen said, and Courtney's mentioned about our record—it was so important that we had that in this override document. At that time, our General Counsel, Mike [Michael C.] Wholley, did not typically review acquisition documents. I was generally the last attorney, the senior level attorney who reviewed an acquisition-type document. He reviewed that document as well, because we knew how significant that document was going to be for the Agency.

What the Department of Justice [DOJ] told folks years later, after that case went to court, is that DOJ does not typically support agencies who are pursuing override decisions. They basically will read what the agency has provided them, and might go back and advise the agency, "This is not something that we can support." Or if it goes forward, and they do support the agency, DOJ will let you know that you only have a 10 to 20 percent chance of being successful.

We knew that it was going to be very difficult for us to be successful in the Court of Federal Claims, in having a court uphold our override decision. Not only did we coordinate within the Agency, we did talk to DOJ and let them know we were doing this. This was coming, did they have any insight? They gave us cases to read. We read those cases, and incorporated some of that language into the override language. I can't remember how many attorneys, there must have been eight of us—

REILLEY: A whole group, as always. Everything involving COTS and CRS is done by group.

THOMPSON-KING: Yes, it was. Everybody got their input. I mean, we were changing some "buts" to "ors," but we knew that this was going to be an important document. Gerst made the decision to override. The other thing is, when you go into court—this was all still new for us. Going to the Court of Federal Claims, it's not a trial court. It's all a paper record. That's also why the record was important.

Gerst was not likely to have the opportunity to go in and testify, and explain what he meant when he signed this document, and he censored things. They weren't going to give him that opportunity. This is your one shot. That's the other reason why this had to be so detailed. That was it. There was not going to be any other opportunity. We also had to put it in Gerst's

language. "Do you agree with everything that's written here? Can you support it? Is it all truthful?" Because what we didn't want was for that to go over to the court and they come back with a statement which we can't back up.

We issued that override decision, and it was challenged in the Court of Federal Claims. The judge in that case agreed with NASA and supported our decision to override. That was the first time in my career here that we had first of all, issued an override, and then had a court to uphold our decision.

WRIGHT: Good job.

GRAHAM: I'll make the observation that given all of this work that you're hearing about, there's still a perception in the Agency that COTS and CRS is a model, that you just get a Space Act Agreement and you transition into a contract. It just kind of happens. The Space Act Agreement sprung fully formed, and then we just move those people over to a contract. It's not like that at all, by a long shot.

We've had people say, even recently, "Oh, you can't protest the Space Act Agreement." It's like, "What are you talking about? We had two protests. We got protested both times." I think this office was so successful in defending the Agency, that people who weren't involved don't have a perception of the difficulties that we faced in implementing the model that we did.

HACKLER: You mentioned before RpK's termination and their challenge to it. A question, I think for you Courtney, is what happened to their IP after the termination? Has there ever been

an attempt to use that? You did work so hard to make these intellectual property provisions part of the SAA.

GRAHAM: As a practical matter—I'll back up and talk about the agreement structure again. The IP provisions only cover the IP that's developed under the agreement. If the partner is doing work outside the agreement, that IP isn't covered. NASA can really only utilize the physical things that are provided to us. They could have a hundred documents, and if we only get five of them as part of a milestone review, there's no sweep up delivery obligation at the end of a Space Act Agreement.

Even though NASA had the right to exercise the IP, we never have. I don't think we addressed it, because we never formally settled with them on the termination that I recall. I worked with you [Karen] and Jon Arena on terminating the Space Act Agreement, and it was really a series of discussions about whether NASA would formally exercise the rights it had under the agreement.

RpK had kind of run out of money in the 2007 stock crash. That's what impacted their ability to perform; it was not technical issues, but financial issues. They actually stopped technical progress because they weren't able to raise funds. There really wasn't an incentive on the part of NASA to penalize them for what was really an externality that prevented their performance. I believe we probably worked with them for better on a year, maybe longer, before we actually terminated the agreement.

I think that the push was that we really aren't seeing that you guys are going to get the money that you need, and so we need to bring in another partner. That's when we had the second competition that Karen talked about, where we actually had the RpK case. It was RpK

that challenged the use of the Space Act Agreement, even though they had been a beneficiary of that in the first one.

People are surprised when I point out, when we talk about this sort of COTS/CRS model, that Orbital [Sciences Corporation] was actually awarded their COTS agreement in February of 2008. Then the CRS contracts were awarded in December of 2008. If you back that up and look at the solicitation periods, this was all going on contemporaneously really, Orbital participating in both sides.

So there really couldn't have been any performance by Orbital under COTS that could've influenced their selection, because their proposal had to go in I think a month after they got the COTS award. If you think about the fact that the technical goals of both efforts were similar, you would think that anyone who would be successful in one is likely to get highly scored in the other, so it really wouldn't be a surprise that you'd see the same group of folks involved in those competitions.

No, we never exercised the IP. That's the only default situation that we've had, I think. NASA has some rights, even in the event of a successful completion. It's just not in our interest, and there's not a lot you can do with random bits of data that get delivered to you. It's kind of contrary to the purpose of the program, if it were to penalize those commercial folks.

HACKLER: Karen, earlier you mentioned that in working with the commercial partners and doing these negotiations, there are a lot of things you learned about the use of SAAs. I was wondering if you all could talk about how their use has evolved. What lessons you may have learned that you could apply to either the second round of the COTS competition, or how you utilize Space Act Agreements now.

REILLEY: Their use has evolved, as Courtney said earlier on, from 15 years ago. We've used them for a variety of purposes. I don't know that lessons learned from COTS really affected how we may or may not use them in the future. I hope we will come up with yet more inventive ways to use this wonderful authority that we have, and we'll hopefully someday have Other Transactions that might bear no resemblance at all to what we're doing now. It's just another way to use our authority.

I think what the negotiations with partners did—it's much more of a negotiation than I recall ever having had on, say, contract terms with potential offerors. You're hearing why they're concerned about certain terms in a Space Act Agreement that, after years of working on negotiated procurements, you don't really hear as much. They might be talking about aspects of their proposal in a competition, but they're usually not really getting down into the "Why does the term of the agreement have to say this? Why can't it say that?" That doesn't happen as much, and that happened a lot with the funded Space Act Agreement.

It made you think about, "Why did we put this in here, and can we change it?" Let's get to "Should we change it?" later, but let's actually think about, can we do this differently? Is there a strict legal requirement for it, or is it just something that we're used to doing? I think that was more the process, rather than anything in particular. I can't think of any particular term or condition that we certainly do differently as a result of those negotiations.

A lot of it was making us think about how we build them, including maybe things that we should've put into some of them that we've subsequently done, that we didn't put in the original COTS agreements. The lessons learned in implementation, as Courtney mentioned, things that neither side really thought about until you're progressing in the actual implementation.

HACKLER: Do you have any examples of some of those implementation issues?

GRAHAM: One of the things was use of government property. The idea of GFE [Government-Furnished Equipment] was very common in the contract context, but we don't have a concept of GFE in Space Act Agreements. One of the things came up to say, "We'd like to use test articles that NASA has in order to be able to do mock-ups of our cargo configuration." Can we use bags and straps, and whatever it is the astronauts are trained on so that they can work with common equipment? We had to go back and think, "Can we do this?" Is there a concept of GFE, or this is supposed to be a commercial activity? Do we make them figure out how to acquire their own for this?

We did determine in that case that we can loan them that property to use. We had situations where the program wanted to give things to the partners in order to facilitate their demonstrations, and we determined that we didn't have authority to transfer title to a Space Act Agreement partner. Where in the contract situation there might be an opportunity for a contractor to acquire a title during closeout and be able to actually own that government property. That was an example of, "We want to do—" and we had to go think about it and come back.

One of the things that has evolved too, is NASA originally, in addition to the IP, we said there's two things that come out of this. There's going to be IP that's generated with NASA funds under the agreement, and there's going to be property that's acquired with NASA funds under the agreement. One of the things that we looked at was the reacquisition of partner-acquired tangible property. Nobody really wanted to buy their stuff at the end of the agreement,

so as we transitioned into commercial crew that sort of evaporated. It really has become less and less of a focus, although it was very much up-front for COTS.

Another thing that has evolved into a little bit stronger approach is guidance for the centers about how they relate to the partners, as the partners look for support from other parts of the Agency. A lot of times they were reimbursable Space Act Agreements. We also have centers that would talk to partners about including center activities in the partners' proposal, and how the centers could interact during the equivalent of a procurement blackout.

Then, what NASA wanted our relationship to look like with those partners. If the purpose was to develop a commercial capability and not some augment of NASA's own capabilities, what did those relationships look like? That's something that's evolved quite a bit over time. I think you had sort of the blackout approach during the first COTS, but there was really no guidance until we got into commercial crew as to what those relationships would look like, and whether there's any type of support that was off the table.

THOMPSON-KING: For me, I won't say they're lessons learned, but lessons to be learned. Things that we're going to have to deal with as we continue to use our Other Transaction Authority. I remember Karen, Eve, and I sat down and, being lawyers, litigators, said, "If GAO doesn't have jurisdiction, who has jurisdiction?" This is still an outstanding issue that we are going to have to deal with. Particularly if we use more of these. While we've had protests about whether this is an acquisition or not, we may one day get an actual challenge of, "Did you make the right decision using your Space Act authority? Did you have a fair competition?"

Where can they voice those concerns? What we have had in COTS, and it's continued through the subsequent announcements, is an ombudsman. The folks can go to that ombudsman

to bring their concerns. What's happened lately is that the ombudsman has been very busy. We're happy about that, because that means that it hasn't gone into court. What's outstanding for us is what's going to happen when we get that first case that goes into court. Right now there's still some debate, because we don't know.

Which court is going to have jurisdiction? That's an issue. In the court system, most folks know about the federal courts, the district courts. There is the Court of Federal Claims, which just handles contract claims. Is that court really going to be court that's going to hear Space Act Agreement issues, or is it going to be a district court? The district court would be district courts all around the country. That's something we're going to have to deal with, and we're going to have to really have conversations with the Department of Justice about how we want to handle that case, and how we're going to argue it. It's going to have ramifications for the Agency from that point forward, so we have got to think about that particular issue.

Another issue is when we are going to be using government money, people start taking notice. This is still novel, but if we keep doing this, one of the things that some folks have expressed a little bit of concern about is small business. In the contract side, there are requirements for encouraging the use of small business. We don't necessarily have that on the Space Act Agreement side, we don't have a requirement.

GRAHAM: It's in the [1958] Space Act, we just don't think about it.

THOMPSON-KING: We have kept that at bay, but as we continue to use Space Act Agreements, we may get more of a push from the small business community asking, "Where are the opportunities for us?" This is a development opportunity. They've been riding that out, and they

see opportunities in the contract area. When we have a COTS, it's going to evolve into a demo. Then when we buy the services, that's when you will have your opportunity to work with those companies.

Some small businesses are hearing that, but they're still looking at all those dollars that are going under a funded Space Act Agreement to that particular company, and are they really going out and using resources provided by small businesses. We're not saying they aren't. They want more participation in that, and I think that's something that we're going to have to look at in the future. That's going to be interesting.

GRAHAM: Right. I was going to follow up on that. I think that Karen's spectacular success in the RpK protest has created some complacency within the Agency that our authority to do funded Space Act Agreements is pretty much settled. The thing is that protest was a factual determination. For that particular competition, NASA was able to prove that we used the appropriate instrument for what our purpose was. That does not mean that the next one we will be able to make that showing.

That's why we're continually harping on our clients about the record. It's difficult when you have [NASA Administrator] Charlie [Charles F. Bolden] going out and giving a speech, trying to talk in shorthand about how we're partnering with these commercial crew folks to take people to the ISS. That's the type of thing that, when you get into one of these litigations, will undercut your ability to establish that no, these are not actually for NASA requirements.

It's a challenge that we have, because we don't like to be the thought police, and the word police, and go around and tell people what they can and can't say, and argue with PAO [Public Affairs Office] all of the time. But there is this sense that, well, the fact that we can do

these is done. They don't realize that was a specific question on that particular competition on that particular record, and we will need to do that again and again and again, if we get future challenges.

HACKLER: We understand that NASA has procedural requirements on the use of Space Act Agreements. What was your input to those, or did you help put those together?

GRAHAM: Where we are—we have what we call a Space Act Agreements Guide. It covers reimbursable and nonreimbursable agreements. It covers international agreements, and it covers interagency agreements. It does not currently cover funded agreements. There was a chapter that was in the guide that allegedly covered funded agreements. It had two paragraphs that said, "Go talk to your legal folks." Then it talked a lot about interagency acquisitions, as if those were funded Space Act Agreements and not Economy Act Agreements.

We said, "This is actually causing more trouble. It's doing more harm than good having incomplete and inaccurate guidance that doesn't really track where the Agency is now." So we pulled that out of the guide. It's available as a superseded chapter on our website if people want to look at it, but it's not part of our official guidance.

We have received direction from GAO to draft guidance. That's being implemented in coordination with updating our acquisition strategy process development to bring funded Space Act Agreements into that ASM [acquisition strategy meeting]/PSM [procurement strategy meeting]-type of framework. They're not ASMs and they're not PSMs, but the idea that we have a parallel process to how we plan procurements, that's officially implemented to do funded Space Act Agreements as well—to create that rigor in the process. As that policy is being

developed, that will feed into the guidance that's developed. It's hard to write guidance if you don't actually have any policy to guide on. That's where we are with that.

HACKLER: We've got about 10 minutes left. I wanted to see if Rebecca had any more questions.

WRIGHT: If you could talk a little bit about your discussion about liability. Where does it fall when you do a Space Act Agreement? How much does the government take, compared to the partners?

REILLEY: The particular funded Space Act Agreement we're talking about here, the COTS agreement, does have provisions in it that flow down from our IGA, our Intergovernmental Agreement that we have with our International Partners for the Space Station. It requires that the Space Station partners—ourselves and our other international countries—waive claims against each other. Won't sue each other, so that we can cooperate without worrying about suing each other over damages to very expensive equipment.

Each government has to flow that down to its partners, contractors, whatever you might call them. That does get into the COTS agreement, that's why it's in there. We are required to flow that down. There is a provision in there that the commercial companies that work with us under the funded Space Act Agreement must waive any claims, i.e., they cannot sue our International Partners or their contractors. That relates to what we call Protected Space Operations, which is fairly broad, but it's not anything and everything. It has to do with things that are part of Space Station activities. That's a very generic, non-international lawyer way of saying it.

That does leave open other possible areas of liability that fall outside of that scope. The FAA [Federal Aviation Administration] has licensing authority for launches and reentries. For COTS, we did say that this is a commercial endeavor so you need to talk to the FAA about having your activity licensed. That comes with certain liability regimes as well. That actually has nothing in particular to do with NASA. That's required by various statues and regulations through the FAA about waivers of claims, insurance indemnification. All of that would apply to our COTS partners, not because of our Space Act Agreement, but because of having to obtain an FAA license for that.

GRAHAM: Then we have the unilateral waiver.

REILLEY: We have the unilateral waiver that we often have in our Space Act Agreements, where we're requiring the partner to waive claims against us. That we are providing funding to help facilitate their commercial activities, and part of that is that we do not expect them to sue us over it. It does have the unilateral waiver in that sense.

WRIGHT: I referred to it as a partner, but is that a term that you use when you talk about the commercial relationship?

REILLEY: Yes.

THOMPSON-KING: That's the term.

GRAHAM: Definitely, partners. It's funny, because it took us a long time to get people to not call them contractors, and to call them partners. Now that we're transititioning into contracts for commercial crew, they still want to call them partners even when they're under contracts. It's a little bit of an adjustment for folks.

WRIGHT: Are you starting to hear that there's more of a shift to move from contracts into SAAs?

GRAHAM: You can't move away from contracts into the SAAs, because they're for different purposes. You could choose to structure your program to meet different purposes, if you want to do that. I just want to be clear on that. They're actually through the Office of Strategy Formulation in the A Suite [NASA Administrator's office], which is headed up by Rebecca [S.] Keiser. It actually has teams looking at potential technologies and industries that could benefit from COTS-type investments.

That's one of the challenges that we have, because they have this "COTS/CRS model," is what they call it. Which, the CRS part isn't actually part of the COTS, and one doesn't necessarily follow from the other. They're completely separate activities. I'm trying to get them to think in terms of the investment and the industry stimulation. The determination that NASA has a need or a requirement is a completely separate exercise, and should be considered by different people in a different process. Yes, there is active work going on now to find other areas where we can make these investments.

WRIGHT: Sounds like there may be a shift in NASA's culture in a way.

GRAHAM: I was speaking to a bunch of law students from Georgetown [University, Washington, DC] the other day, and one of the things that I talked them about was that NASA isn't a regulatory organization. We don't really make policy for the government, but we implement policy by the way we spend money. If we decide to spend money through a contract, that will have ramifications on the industry base, in the type of IP we get, who owns the work product, what that relationship looks like. If we choose to spend our money through investing and development of stimulating industry, that's going to have different ramifications.

As we're looking to implement administration priorities, the question is how do we spend our money in a way that's going to best advance those administration priorities? The administration we have now is very focused on developing commercial capabilities, so I think that there's an alignment there with that continued use of authority. When GAO sat down and really wanted us to write some regulations on how to do these agreements, I said, "I'm really not comfortable with that because I don't know what a funded Space Act Agreement will look like in five years."

I don't know what our next administration is going to ask us to accomplish, so we can't really say what that use of the authority will look like. That's one of the reasons why we've been a little bit reticent to say, "Here's how you do a funded Space Act Agreement. You do a competition and it looks like this, and you do this, and you have to have these things, and here's what the agreement looks like." It's going to be hard to undo if we want to maintain the flexibility, and why would we constrain ourselves?

WRIGHT: Mr. Wholley used the expression "cautious innovation." I thought that was an interesting pairing of terms.

THOMPSON-KING: Yes. One of the things that I've been teasing Courtney about, saying how many people don't listen, but they'll listen to this years later. On the contract side of the house, we have a concept known as non-competitive awards. We haven't gotten to that concept in awarding Space Act Agreements. We've been focused on competition. We have been focused on fairness.

In 5 years, 10 years, we may be at a place where we are comfortable making awards on a non-competitive basis. I don't know how we get there, but that may be something that we look at, that we will be pushed to look at. The guidance that we're going to have to issue may have to anticipate that. Because I've gotten questions from different folks, and as we go along, that may be something that we have to grapple with on the Space Act Agreement side of the house.

REILLEY: That may very well be driven by whatever the purpose and nature and working relationship of that next type of funded Space Act Agreement is. When Courtney was talking about the guidance on Space Act Agreements, and why that's something of a tentative subject because each one might be different—we used to have program guidance. It was called a PIP, a Program Implementation [Plan], about funded Space Act Agreements.

It was developed for a prior model that we'd had, that you would use for a more collaborative, advancing the state of industry. Not really a competitive environment. Companies, a lot of universities, would submit proposals they wanted to participate, but it was not quite a come one, come all. It wasn't exclusionary. It wasn't we only have this many dollars, therefore we can only have a few partners. We had 40 partners. We can have multiple partners.

It had a very different flavor to not only why you were doing it, but how you were doing it, so the process was quite different. Once upon a time, we did have guidance there for that kind of activity. Would that sort of guidance still be appropriate for the type of funded agreement we did in COTS? In some ways, but in some ways probably not, because it was set up for a very different type of partnership. Same thing going forward. Who knows what the purpose of another funded Space Act might be.

GRAHAM: I'm just remembering—we had a funded Space Act Agreement to set up a venture capital fund called Red Planet Capital [Inc.], and NASA actually provided seed money. I think we started with $10 million and we were going to fund $20 million per year for four or five years. It was for some investment managers to invest in technologies that were of interest to the Agency and would advance the aerospace industry, to stimulate development. That didn't get political support, so we were directed to stand it down. But that was a funded Space Act Agreement to give someone some money for something that wasn't even technology development. It was money management to lead to technology development. I can see that we're going to get lots of interesting ideas like that.

REILLEY: A different model—we did one at [NASA] Dryden [Flight Research Center, Edwards, California]. They did a funded Space Act Agreement with the Air Force and with several companies, that unmanned aerial vehicle. That had a different flavor to it as well. You can see why it would be difficult to have a process, a policy or procedure, when the nature of these particular activities is very different one from another.

GRAHAM: Right, because I was thinking about the JSRA [Joint Sponsored Research Agreement] to develop one of the X planes. The AGATE [Advanced General Aviation Transport Experiments] Program was where we provided money to a nonprofit, that then managed everybody.

REILLEY: There were two. AGATE was the one where we actually had about 40 different partners not exclusive of each other, we could have lots of partners. The one we did after that, SATS [Small Aircraft Transportation System], was the one where we had one nonprofit, and they had partners. That was yet a different model of how we went about considering who we would partner with and how we would go about doing that.

As Sumara said, we have always had some element of a competitive process. That process has varied depending on how we were working with our partners. The extent to which we will have that, or will consider that, depends on whatever the next project is.

HACKLER: Anything before we close? Are there any last thoughts you want to put on the record about COTS and Space Act Agreements?

GRAHAM: No, I think you guys did a good job of keeping us on track.

WRIGHT: Well, thank you.

HACKLER: Thank you very much for your time this morning.

[End of interview]