

**CENTER FOR
STRATEGIC AND INTERNATIONAL STUDIES (CSIS)**

**DRAFT REPORT RELEASE:
“NATIONAL SECURITY AND THE COMMERCIAL SPACE SECTOR”**

WELCOME/INTRODUCTION:

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JOHN HAMRE: Thank you all for coming. I'm delighted you're here. My name is John Hamre. I'm the president at CSIS and this is a little different for us, today. Normally, we do big public events like this when we're done with a study and we're not done with this study. We've actually decided to, you know, depart from our normal practice a little bit and take a study in front of an audience at a stage when we think we know where we're heading, but we still are looking for the kind of input and review that we need from all of you.

So, frankly, you're all here to work today. You're here to help us think through, identify, discuss the issues inside this report. We're going to need that as we take this thing to the next step. So I want to say a sincere thank you to you. I'm going to – I have not been involved in writing the report, so I'm free to say things, okay? Because it's a – and I would like to offer a few, just, personal observations this morning that I hope are not unrelated to the report, but probably go a little bit further than we do with the report.

Let me introduce this by sharing a little story. I was the deputy secretary of defense at the time when we went through a paranoid process that led us to shut down relations with China on space launches, and had lots of very painful experiences up on Capitol Hill. You know, so that climate that existed at that time – well, about two months after I left and I came here to CSIS, I was invited to a dinner over at the National Academy of Sciences. And the reason is, one of the people in our orbit was being inducted as a lifetime honoree into the academy.

And another individual that night was the head of the Chinese Academy of Sciences. And just as things were – luck would have it, I was seated next to this guy's wife, the Chinese guy's wife. And she didn't speak English. We had an interpreter. And so we were struggling through how to make conversation, but I did learn during the conversation that she was the lead designer on the Long March ICBM. I went, oh, boy. You know, I'd just been deputy secretary. We'd better change the subject here.

And so I said: Well, how long are you going to be here in the United States. And she said: Oh, we'll be here for a month. A month? Yeah, she said, we're going to be here a month. I said: Where are you going? She said: We're going to Detroit. Detroit, for a month? (Laughter.) You know, what in the world? And she said, yeah, our son's a lead designer for Ford Motor Company. You know, and I thought to myself, you know, this is a little different than the world I had been living in, that where we have such a deep paranoia about the Chinese on security grounds and then find the lead designer for the ICBM that we think has a nuclear warhead on it, aimed at us – her son lives in Detroit.

Okay, this is a more complicated world. And I bring this up to say that – you know, I spent 25 years in government working on national security issues, and a lot of them working for Sen. Warner. And to the day – I'll go to the grave wanting to defend this country, but we do not have a very sophisticated approach to industrial security and technology security. As a matter of fact, we have a very inadequate approach. We have a very static approach, as though we can

freeze in time a set of technologies and they won't change because of our political preferences. And that's failed.

What did we do? I mean, we now have – the most reliable space booster for commercial launches is in China. And yet we thought we were going to freeze them out so they could never move forward if we wouldn't work with them. Was that an intelligent security strategy? You know, I noticed, when I was in government, we went through – we were going through a painful discussion about letting American satellite manufacturers, imagery satellites, put up commercial satellites. And we said, well, we're not going to give you a license until you can prove that your competitors are going to be doing just about the same thing.

Well, you know, what sense did that make? We, in essence, used regulation to guarantee a protected market to other countries before we'd let our companies compete. You know, is that a sensible security strategy? I mean, it's as though our political preferences can control the evolution of technology. That's just crazy because we have this very static view of industrial security. You know, when we put in place the ground rules, you know, for today's industrial security, it was back in the 1950s. And it was a very important part of the strategy to win the Cold War. I have no complaints about that.

But back then, you know, because of the constraints of technology, your engineers had to be close to the factories, so that you could work out the problems. So you could put in place a security system that was grounded on geographical borders. You could do it back then. But that's not today. I mean, today we're designing things on a global basis. So think about what we're doing. We put 100 percent inspection requirements on anybody that comes from China. We put a 2 percent inspection requirement on containers that come from China and a zero percent inspection on electrons.

I mean, our paranoia is creating an incentive to move jobs to China, again, because we haven't updated our thinking. We have these very obsolete ideas about security. We have this idea that security is static. We can freeze it. Well, you can't. We've got to develop a much more dynamic approach.

So when we started this and I said to David and the team – and again, this is me talking here, so don't blame them for what I'm saying here today – but this is part of a broader fabric, a much bigger fabric, of how do we design viable security structures in the 21st century, when you have such ease of movement of ideas and things and electrons and money? All of this can move so easily today.

And there's so much talent other places. It isn't like it was in 1952, when 70 percent of the GDP of the world was in this country. It's not like that anymore. So we now have to design security systems that work in this age, not just carry over old models from the past. So the study that you're looking at – and as I say, you've got to help us here today. We've outlined four different alternatives. And part of what we want to do today is to hear your thinking about this. What is the dynamic beyond our study group? You know, so we're getting the input from people around the community.

At the foundation, still – and Sen. Warner dedicated his entire lifetime, and he still does, to securing this country – but it is having a far more dynamic concept of security than we have had. And that’s what we’ve got to do with the conference today. So, David, let me get off the stage and just say, thank you all for coming. I’m delighted to have you here. I think we’ve got a very important opportunity in front of us.

As I said, we’re about 70 percent through this. We’re at that stage, like I said – we don’t normally do this. We don’t normally take it to this stage and then invite the broad critique, but we think it’s important to do it right now. And you’re going to be part of that. Thank you all for being here. Glad you’re here. (Applause.)

DAVID J. BERTEAU: Pardon me while I move this mouse. It’s not connected to anything, so it might give me the illusion of control. I want to thank you all for coming, obviously. I would recommend that if you have a device that makes noise inadvertently, like a cell phone, that you either turn it off or turn it up really loud so that we’ll know who to blame when it goes off. And I’ll try to do that with mine.

I want to open up with a short story. Almost 30 years ago, I was coming out of graduate school and I was being recruited, among others, by the Johnson Space Center and NASA, to go to work there. And I was invited to drive to Houston – I was doing my graduate work in Austin – and be present in the command center for the first shuttle launch. So I arranged to do that. I think I spent \$27 for a motel room, which, on a graduate student salary, seemed like a lot of money at the time, and got up early in the morning, got through security, got in, and of course, those of you who remember will know that that launch was scrubbed.

And so it was a real signal of two very, very important things. One was that the government was about to fundamentally change the nature of the launch business. And the second was that you couldn’t count on it. And as it turns out, I didn’t go to NASA. I’m sure that, that event had nothing to do with my decision. Instead, I went to DOD and I got involved in the industrial base business and today I feel like I’m almost right back where I was nearly 30 years ago.

As Dr. Hamre said, today we are doing something that’s a bit unusual for CSIS, releasing a draft report for broad public comment while our analysis is still ongoing. And we’re here this morning, first, to walk you through that whole process, to describe our next steps, to distribute a copy of that draft report to you and then to take your questions. So what I want to do is get started and hopefully I’ll answer a number of your questions before you actually have to ask them. Can I have the next chart?

Everybody can hear okay? I guess if you can’t, I’m not quite sure how I would know, but anyway. This is what our draft report does. It describes the importance of the commercial space sector, broadly, to U.S. national security. It catalogs a number of principal concerns about commercial access to space, which is the launch side of it. It lays out a series of options to address those concerns and it gives you the framework that we’ve established for analyzing those options.

What it does not do is present the results of our analyses because, in fact, that's still ongoing. So as a result, we have elements of this report that you might call findings, although we actually don't call them findings yet. But we really don't have elements yet that could be called recommendations, although you can see from Dr. Hamre's comments that we might occasionally be leaning in a direction that would illuminate that. Why are we doing it this way? Well, I'm going to touch on a few reasons as we go through this, so first, let me describe our methodology. Next chart.

It's, as all of our reports are, an attempt to be an independent and objective assessment. And ultimately, we want a final report which does go out for public release. It builds on the work we did three years ago that was released in a report in February of 2008, on the health of the U.S. space industrial base and the impact of export controls. And I'll talk a little bit more about that study. We collected a lot of information through extensive interviews. They were all done off the record and not for attribution. I won't tell you whether anybody in this room participated in this process, but we'll continue to do those.

And we looked at virtually all the data that we could find or had our arms around. We focused on launch of medium to heavy payloads to geosynchronous orbit because that's the real driver of both the overall dynamic and of the industrial base. And of course, we have the next approach of the draft for comment. So let me – I mentioned that we started, our starting point was actually our 2008 study. Let me quickly go back a little bit to that study. Next chart.

You can't read this and that's fine. You can find the report on our Web site. It's a briefing and, actually, this particular chart takes like five charts in the briefing, so you can go through it, but these are the findings. And you can, as I said, find that on our Web site, but overall, let me just highlight three key findings. One, we found that space is obviously critical to national security and the economy. That's no surprise to anybody.

Second, that all of the segments of the U.S. space community are highly interdependent – military, intel, civil and commercial – but that sometimes that interdependency is recognized by lip service but not universally by integrated actions across all of those sectors. And finally, that the U.S. needs access to technologies, but that increasingly those technologies are not coming from the U.S. That led us, in the 2008 study, to an extensive focus on export controls, which is not where we started. We started purely looking at the industrial base. And you'll see that throughout the issues in that report. You'll also see it a bit in the draft today.

And, of course, that issue is back on the table again. I was talking with some in the audience beforehand about how these topics tend to follow a sin wave. There are times when everybody's paying attention to it and then they kind of drop off and you wonder what happened. And then they come back again. And we're clearly on the upside of such a wave right now. Next chart.

We also had a number of recommendations that tried to address the concerns that were underlying those findings. And actually, the government has undertaken to implement a number of these recommendations. It's not our charter today to try to report on that, but it's quite rewarding, obviously, when you're in a position such as we are and our charter is to help provide

analytical input to important public policy issues and help move them forward and you see that those are actually received on the other end. It makes it easier to get up in the middle of the night and come to work. But it was clear to us that more was needed. And that's one reason why we undertook this review of the commercial space launch at this time. Let me have the next chart.

There's a second reason. As I mentioned – the sine wave effect – it seems like everybody's doing a review right now. There's a huge number of ongoing or recently completed studies and reports. Here's a partial list: the White House's National Space Policy being written today, the ongoing space posture review at DOD. We had an interim review out in March, last month, final report coming out at a date which, as far as I can tell, is still to be determined.

So part of the reason we scheduled this public release is, in fact, because of the timetable and schedule of these ongoing activities inside and across the federal government – and our desire to fulfill our responsibilities, to contribute where we can, to those, rather than wait until they're finished and then we come along and follow behind and critique them.

But there's a third reason we undertook this. Next chart. And that's because, actually, it matters. So it's not just timing and it's not just follow-on. It's actually pretty important. We call this chart “Two Reasons Why Policymakers Should Care,” but it's really our preliminary findings. Our overarching finding is that we concluded that national security depends upon commercial assets in space, and that's widely recognized, but that current implementation of the policy of assured access to space does not adequately recognize or deal with that dependency.

That's a critical, fundamental articulation and we actually had trouble finding it articulated that way in any existing policy statement. You've got plenty of commentary on the policy of assured access to space, plenty of recognition of the dependence on commercial assets for that policy, but inadequate consideration of what it means, of how we need to operate. And reflecting that overarching finding, I think our discussions and our data analysis yielded, in addition, seven areas of concern. Next chart.

This kind of lays them out. We give a lot more detail on each of these in the draft report. Limited access to U.S. launch for commercial satellites – there's actually been one commercial satellite launch in the U.S. in recent memory and none on the current manifest. We call that limited. You could actually use a stronger word than limited. Uncertain access, potentially, to international launch providers – things do get in the way. A pretty fragile U.S. launch industrial base, especially when you get down to second- and third-tier suppliers, where, in many cases, we have a critical technology and we're down to a single supplier and potentially a vulnerable one.

Increase in prices. Not quite as clear that there's an increase in cost. This, actually, is an interesting question. Issues around payload security and whether we can assure that for the future, given developments in detection and cyber. The potential consideration of a real, catastrophic event, or even a combination of catastrophic events. I was down in Pascagoula, Mississippi, and I watched what a 30-foot wall of water did to Ingalls Shipyard. And I think of what a 30-foot wall of water would do to Cape Canaveral. And it would take more than a day to get anything back, plus, of course, the catastrophic failure of a launch vehicle.

And then, on top of that, you could look at each of those concerns and say: Well, it's not so bad today. But you also have to look at the long-term implications and where that might go if the policies don't change. Let me have the next chart. So here's the structure of our study. The first part talks about the overarching finding, the relevance of commercial space to national security. The second looks at the current state of the market. The third is really kind of the heart of our report – and I'll go through each of these in more detail, so I'm not going to cover a lot now – and that is a series or set of options for addressing the concerns, or improving access.

The fourth part is the criteria that we use for evaluating those options and the fifth is our next steps. Let me have the next chart. I apologize for the heat in the room. You're welcome to take off your jackets and, momentarily, I may do the same, since this is not being done for primetime. I think the weather may be changing faster than our HVAC can accommodate. When you go from 32 yesterday to 80 today, it's a little bit troubling.

So this is the first part. We've discussed our finding already that commercial space assets are critical to national security. And we found a fairly widespread thought, though, that somehow those assets are just going to be there when we need them and that the government actually has limited responsibility, or even need for awareness of that. And look at the demand today, just for bandwidth from commercial communications satellites. Roughly 80 percent of DOD's use is off of commercial assets. And in theatre, OEF and OIF, it's reported in the open media as high as 93 to 96 percent.

And frankly, there's no intention by the government to go back to relying on solely government assets for those purposes. That's a widely recognized and potentially state-able reality. But make no mistake about it, the access to what we're using today, over Iraq, over Afghanistan, was neither carefully planned for nor deliberately made sure of. We were able to take advantage of the opportunity that was provided and we certainly have. So that's an important element as we stand here.

And in addition, of course, as I commented earlier, the sectors of space are interdependent. Let me have the next chart. This is just a representation of that, of the civil and defense and intelligence and commercial, and the key part, obviously, is the middle – the common intersection of all of them – and we list some of the characteristics of assets and capabilities that are collocated inside that intersection area. First, of course, is launch. Second, communications – on down the list, including industrial base and technology. This chart's in the draft report. You'll be able to look at it there.

So if national security depends upon commercial space assets, but doesn't fully recognize a responsibility for launching those assets, what does that mean? Well, to answer that, we started by looking at the current state of the commercial industry. Next chart. Part two of our study gives a lot of detail, not only on the market, U.S. and globally, but also on the federal policies and regulations and statutes that affect that market. So let me just highlight a couple of points. Next chart.

The bottom half of this chart is geosynchronous-orbit satellites. You can see, on both the left hand side, which is history, the right hand side, which is projections, it's been staying around 15 launches per year – ranging, 10 to 20 – and it's projected to stay in that range for the next decade. Next chart.

But the second factor is that the U.S. share of market is declining – from over 60 percent in 1997 and 1998 to 30 percent today. This only goes through 2008. It doesn't reflect the financial crisis, 2009. Those data are not fully absorbed yet. I suspect when we get the 2009 data that trend will not have changed. That trend line will continue to go down. Next chart.

Because here you see the same declining share – and you can't really read the numbers – but I'll just call your attention: On the left side, the U.S. is the big, blue 75 percent and on the right side, it's 25 percent and still declining. So if U.S. national security and the economy depend on commercial space assets and the U.S. role in the global market is declining and the government is underrecognizing that situation, or its roles in addressing it, what are the options? Next chart.

That's our third part of the study. We looked across the band of options that we found somewhat inside the government or nearby had put on the table for consideration, as a way of dealing either with this issue directly, or there was a tangential impact on these issues from those options. And we arrayed those options into four sets. We did that for three reasons. One is, we want to evaluate those options against a common set of evaluation criteria and see what elements of each one make sense.

The second is, we're putting them out now to you and the broader community to make sure we're not missing something, or mischaracterizing something. And the third is, we want to make sure that the ongoing studies underway today are aware that there are multiple options available and they don't rush to conclusions and decisions on the more narrow option set that each one of them might be looking at. Because if you don't know all your options, you're likely to pick whatever's handy, rather than whatever's best. Next chart.

These are the four sets of options: leveraging foreign launch providers through partnerships, through changes in government policies; encouraging competition, which requires a number of changes inside the U.S. as well as, potentially, interaction globally; the opposite of increasing competition, which is increasing the government role – essentially, instead of competition, have the government do more – and then, lastly, changing the dynamic by changing the demand.

None of these are particularly easy. They're all fraught with peril. And the report has quite a bit of detail on each of these. I'll be glad to go through them in more detail in the question and answer period. Next chart. So the final element of our analysis, part four of the report, was to lay out the criteria for assessing and evaluating those option sets. And they cover five areas – next chart – reliability, security, affordability, feasibility and timeliness.

So our draft report defines each of these in detail, describes sub-elements of evaluation, so you'll actually see what we're measuring against – these are not hypothetical or ideological

criteria, but actually analytical ones – and it describes how we'll assess the option sets against each one of these. So, as with the options, we lay these out. In case we're missing something, you'll help us identify and rectify that. Next chart.

So what are our next steps? We'll release this report. We'll seek comments. We've set up a Web site. We've sought opportunity for providing input and we will acknowledge and accommodate each of those. I suspect we'll divide the comments into the spurious and the serious. And what the boundary line is between those will depend on whether we get ten or 10 million.

I don't expect 10 million, but I've told my staff – I said, you know, I used to work for the government and so I'm very familiar with the government's approach to comments, which is: Thank you very much for your contribution. We've done a careful assessment and we've concluded that our existing path completely accommodates all the important elements of your comment. Some of you may have been on the receiving or the sending end of a similar message at some point in your career.

I particularly used to do this with members of Congress, but I was much more – attempted to be much more subtle. I suspect it did not come across that way. But meanwhile – and so we're going to be open for comments and, obviously, for the significant issues that come up, we look forward to meeting with people, to go on through detail, acquiring more information, et cetera, wherever possible or useful.

And meanwhile, we're going to continue our fact-finding and our analysis, evaluating the options, refining as needed – meet with those who have more to offer – and put out a final report by the end of June. Next chart. Here's the address for the comments. The report will be on the Web at the conclusion of this. It may already be on the Web. If anybody's got a wireless connection, you can check and see. And so we'll be ready to go.

At this point, I would like to acknowledge the contribution that the folks on my team who made this possible – the ones both in the room and not. And I'd like it, actually, if you all would stand up when I call your name because I really want to call you out on this in an acknowledgement kind of way. It'll also let me see who's not here. (Laughter.)

Yeah, I teach school in my spare time and I like to find subtle ways to take roll, rather than make it obvious. No, seriously, the amount of effort and the contributions the team made on this report – and I'm sure I'll overlook somebody in this process – was just phenomenal. We've been at a very hard run for four months on this and have covered an awful lot of territory quite thoroughly.

So, Tara Callahan, Lindsey Ohmit – you can go ahead and stand up with your laptop, or wave your hand – Tom Patterson, Greg Sanders – if Greg is here, that means it's on the Web. Right? Great. Stephanie Sanok, Gary Powell, Brian Green, Josh Hartman and, of course, my deputy director at the Defense-Industrial Initiatives Group, Guy Ben-Ari. Here's not here today. He's actually headed out to Seattle to do an industrial plant tour.

And most importantly, my co-project director, who will join me up on stage here, afterwards, for the questions, Greg Kiley. I would like to extend my personal thanks to all of you for your contribution here. I wouldn't be up here today if not for the work you've done. So that concludes our presentation. Here's how we'd like to proceed. We have copies of this draft report available.

What I'd like to do is take a break, let you get your own copy – I think they're right outside. Tara, is that right? I would really ask you to take one copy each – not more than that, please, because otherwise we might run out. And then we'll reconvene and take your questions. So with that, let's take a break and get the report. Thanks.

(Pause.)

MR. BERTEAU: Well, I had this plan that if we took a break and handed out the report, everybody would just take the report and leave. (Laughter.) And the question and answer session would be short and sweet. Seriously, I think it's a tribute to the timeliness of the topic that so many of you have come here and – I know that what you'd like to do is spend a little more time thumbing through it. And you'll actually be able to do that because I'm quite sure that there are a number of questions that are somewhat independent of actually what's in the report as well that we could entertain.

So our process is we've got folks with microphones. Let's see, who's got the mikes there? Elena (sp) has a mike and Jesse (sp) has a mike in the back. So if you'll raise your hand, wait for the microphone to come to you, put it in your hand, hold it up to your mouth and – (laughter) – you'd be surprised, you have to actually – nobody in this room is technologically as un-savvy as I am – tell us who you are and where you're from and then ask your question. So let's start here in the middle and then we'll go to the right side of the room. Thanks.

Q: I'm Dick Van Atta with the Science and Technology Policy Institute. And you raised a set of options and you presented them as independent – or they look they're presented as independent options. What appears to be missing is the concept of an overall strategy and a linkage and relationship amongst options based upon an assessment of the factors that you have here: the cost, the requirements, the needs, the impact, et cetera. So do you see yourselves building something that would in fact create a broader strategy or call for a broader strategy? Raising the second question, whose job is it to do that?

MR. BERTEAU: There's actually a third question implicit in that question. But let me tackle sort of what we're going to do and then I think that gets partway to your question, Dick, but not all the way to the end. We recognize, first of all, that there are ways to assemble elements of the options that are not mutually exclusive.

So these are not really – you have to pick option one, option two, option three, option four. And while I'm not going to lean quite as far forward as my boss did earlier today, I think that it's quite likely that we'll assemble a set of potential recommendations that would cut across and integrate from amongst the options and other elements as well.

The linkage of that to a broader is, it seems to me, you know, from a strategic planning process point of view, both a bottoms-up question, which is the way we're coming at it, but also a top-down question. And we're not necessarily in the current operation planning on coming at it from that direction. It occurs to me that that's something we can think about certainly and perhaps take out from this the elements of the path forward that would be required to link to that broader strategy and that broader process.

In terms of who's in charge, I'm certainly not prepared to go to that level yet, but I've spent a lot of my life wrestling inside the interagency process and the one thing we all know for sure is that if nobody is in charge, then really, nobody is in charge. And I think that's going to be a critical aspect of it.

It's not identified either as one of our evaluation criteria or as a particular set of options and in some cases, it may be implicit. In some cases, we may have to make it explicit. So I think we're sensitive to those questions; I don't know that we have a definitive piece to each of them, but that's how I see them linking together. You have anything you want to add to that, Greg?

GREGORY KILEY: Everything you said was right on point. I don't think we go that far to the strategy. But one of the important things by going around to the different interviews and the different subsets of stakeholders was that each – we're looking at the option to improve access from just their little window. And I think that there's a value here of explaining that there are other windows, there are other avenues. So we don't go all the way to a national strategy, but we do say we might want to stop looking outside the one stovepipe.

MR. BERTEAU: All right. Other questions here? While the mike's in the middle and then – I'll do this side and then we'll move back over to the other side. So Jesse, we have a question right here.

Q: Thank you. Assumptions and context are certainly very important for any study like this. And I just want to be sure that I heard you correctly at the beginning when you said that the Long March, I believe, was the most reliable rocket. I didn't understand that and by what criteria do you make that?

MR. BERTEAU: And you are?

Q: I'm Patti Grace Smith, the former associate administrator for commercial space transportation at FAA.

MR. BERTEAU: Got it. Thank you. I would note for the record that the question of the Long March's reliability being the most reliable launch rocket was actually not in our study but in my boss's opening commentary, and he did – (laughter) – but now I feel like the witness for the administration who just blamed the president for my problem. (Laughter.) And so that's not quite my ultimate objective here. I don't actually have the data for proving the validity of that statement.

But given the catastrophic event scorecard, it's at least tied for the top in recent times in different versions. I think that the question of reliability is certainly one of the issues that we're going to continue to look at. I don't know that I would characterize the outcome of that assessment at this stage. So in a sense, I can't validate that statement, but I can't deny it either. And it's clearly something that we need to pay attention to and validate it one way or the other. We've got a – one over here, Elena.

Q: Thank you.

MR. BERTEAU: If I were actually in a hearing, I would have said, I'll have to take that one for the record. (Laughter.)

Q: Okay. Yoshi Koizumi (sp) from Japan Aerospace Agency. Expanding the commercial opportunity might conflict to keep or maintain the sufficient security level and this issue should be highly prioritized. It's very important. So how do you work out to solve this issue?

MR. BERTEAU: Well, the issue of commercial expansion versus security, of course, is kind of at the core of a lot of the government policy questions today. And your comment about should it be highly prioritized, I don't disagree with that, although I would actually think that where we sit right now, virtually everything we've touched on here is a high priority. I don't think we have anything in our report that falls in the category of second tier of issues now, which is – makes it quite complicated and difficult to figure out.

I think it's important to recognize a couple of changes in reality, both with respect to security of an individual payload and respect to a system that manufactures that security through export controls and other technology controls. The U.S. depends upon two things in order to maintain its technological lead: One is obviously the identification of critical technologies that need to be protected in terms of who gets them and when they get them and what they can do with them. The second is maintaining that lead by continuing to invest and develop.

Both of those have been key elements of our security for decades. But the world is so much different now. And it's not – Secretary Gates gave a speech last week – some of you were probably at it, most of you have read about it – in terms of laying out the national security challenge for export control reform. And he put it in the framework primarily of we have a system built for the Cold War and we're not in the Cold War anymore.

There was a very key sub-element that I think goes right to the heart of your question and that is that in the past, it used to be that all good new national security technology was developed first within the U.S. national security community. And that is no longer the case today. And you know, 15, 18 years ago we had this big push for dual-use technology, right? My friend Dick Van Atta sitting there was a – either a precursor or a harbinger – I am not sure which. But what dual-use technology meant in the early and mid-1990s was it was developed for defense and then we figured out how to apply it elsewhere.

We're in a whole new world of dual-use technology, where the technology being developed today is in the commercial global market. It's not being developed – and this is not true across the board; obviously there's plenty of key technologies still being developed inside the national security arena – but increasingly, there are valuable technologies for defense and national security applications in use that are developed in the global commercial arena.

And when you have a system that's set up based upon the predicate that you're going to have it first and then you figure out what to do with it and you migrate that to a system that says, somebody else develops it first and you got to figure out how to get access to it, that's a whole different dynamic and I think that's the interface that we have to approach the question that you've raised of the interface of security and commercialization.

We can't stop the growth of the global commercial markets. It's just beyond our capability. And we've got to learn how to accommodate and live within that. And we've got to learn how to both adjust our policies and our approaches as well as what we depend on and who and how we accommodate those from a – everything from a contractual level all the way up to a technology development level. All right. Question in the back.

Q: Ben Baseley-Walker from the Secure World Foundation. I noticed in your report when you're talking about leverage with foreign launch providers. You put Arianespace and the Great Wall Corporation in the same sentence. Obviously, U.S. policy toward France and U.S. policy towards China are somewhat different. Has your study contextualized engagement with Great Wall or options like that in the greater picture of U.S. China policy?

MR. BERTEAU: I missed the verb in your question. Would you repeat that again?

Q: When you were looking at your study with your assumptions, were you looking at the greater picture of U.S.-China policy when also looking at export controls and future partnerships?

MR. BERTEAU: Well, I could tell you that I'm still looking for exactly the precise definition of what U.S.-China policy is, but I think more importantly, we're clearly cognizant of the multiple layers of dynamics involving the question of use of China. And occasionally, actually, those dynamics get in the way with France as well, although I think that's behind for us the time being.

But we're cognizant of that, but I think we have to look at it analytically from the point of view of what's available today. And if that doesn't meet the needs, what has to change in order to allow those needs to be met? So we certainly haven't taken off the table either policy changes or implementation changes as part of that evaluation. But we haven't concluded what those – what our recommendations would be in that regard. A couple questions up front here and then I'll go to the middle. So why don't you go first and then Vincent – oh, are you going to let him go first?

MS. : Yeah. (Laughter.)

MR. BERTEAU: But just keep the microphone and hand it to her when you're finished.

Q: Vincent Sabathier. First of all, with the last question, if I remember well, our rockets are managed by the MTCR regime. So it's missile technology, so we shouldn't forget that. It's a very important point in national security. And as far as I remember, China is not a signatory of MTCR right now. So that's just first point.

But then I had a question about the economic of the study. We've seen recently both ULA and the Japanese – our Japanese friends with the H2 – they pulled away from the commercial market. The reason is, is it an industrial base question or is it an economical question because there is not enough market to sustain all those launchers. And when you see that there are only 15 commercial GTU (sp), clearly – and the bankrupt of Sea Launch lately – clearly, there is not enough business for everyone. So how do you assess the purely economic situation of the question?

MR. BERTEAU: Assessing the purely economic situation of the question – and actually we get at this in our fourth set of options, which is are there ways to increase demand, which would in fact be a fundamental way of changing the economy. Some of that will have to do with the evolution of the global market. When I look out into my BlackBerry and I see the announcement of 3.2 percent real growth in the first quarter of the economy today, that's a positive signal.

About 20 years ago, I had the opportunity to study what we were going to do with the defense industry at the end of the Cold War and how we were going to spend the peace dividend, as if somehow the government was going to make that decision. And one of the key conclusions was that there's almost no policy that will succeed in redirecting resources that would be better than 4 percent per year real growth around the planet. All right? So to many ways, we're subject obviously to where the global economy goes and where are our own domestic economy goes.

That said, I think there are a couple of interfaces that come into play and we want to look at how those interfaces do. There's a big issue about how big do you need to be and can you use more and smaller so that the ratio of the cost of the payload versus the cost of the launch changes. And that's an economic, analytical dynamic that I think bears some assessment in terms of where the break points are there, not intuitively obvious.

The second actually has to do with a third element that comes into play besides just cost and demand. And that is the government's role in providing availability. And for the government, cost is not really the big driver. And time is free. It's way more important to make sure that you have 100.0 percent reliability of success for military payloads and the extent to which you've got an integrated approach obviously commercial payloads takes not only second page, but probably last page.

That creates an economic circumstance in terms of tradeoffs that companies just can't live with. You can't live with the uncertainty – or not very often – of we're not quite sure when

your line will form, when you can get in it and when you can get out of it and the potential for holding something up.

And I don't mean to imply that we think that you should sacrifice national security in order to satisfy commercial launch demand. But I think there are potentially better ways to integrate those two. All of those taken together can change the economics and both the demand and the availability side of it.

Q: I'm Robbie Sabathier. My question is with respect to the funding of the study. My understanding – I see John Warner here, Sen. Warner here. I believe Mr. Kiley, you worked for Sen. Warner and I know John Emery (sp) is a good friend of Sen. Warner's. We also know that Sen. Warner has worked in the past, and I think currently, for the commercial satellite operators who have an interest in opening up the Chinese launch market to U.S.-made satellites. And we believe and we know that, that strategy failed on the Hill and with the administration.

We did hear that they came to CSIS asking for this study, which I understand is going to be an independent study, but that perhaps they are partially funding it or have a huge interest in the outcome either because it will give them a reason to say, look, we do need the Chinese market open because there's no U.S. launch market, although SpaceX is trying to get into the launch market and opening up the Chinese launch market would kill that U.S. industry, that budding industry. So my interest is in, are they funding the study? Do they have a valid interest in the outcome? Or is this truly independent?

MR. BERTEAU: I think it's interesting that you start out with that Greg Kiley worked for Sen. Warner. If you look closely at the record, you'll see that I actually worked against Sen. Warner for longer than Greg Kiley worked for Sen. Warner – (laughter) – including four rounds of base closures, which I had the opportunity for him to give me the benefit of his personal views of the wisdom of my course of action. (Laughter.) Perhaps a number of times.

But I think the point of your question is actually a very serious point. Let me describe to you how we undertake our work, particularly in my group, the Defense-Industrial Initiatives Group. Roughly half of our funding comes from corporate contributions to CSIS, and there's an internal allocation process by which those funds are made available.

And from that, I create essentially a core funding capability, which I use to do many studies ranging from examination of professional services contracts, contingency contracting in Iraq and Afghanistan, European defense industry, our own assessment of the relationship of government policies to the financial performance of the companies and independent assessments of particular industrial base issues. This falls into that category.

There are contributors and sponsors who have multiple vested outcomes in the issue here, some of which are in direct competition with one another. We face that in almost every issue that we undertake, but I stand quite firmly on both the independence of our assessment and particularly on the independence of our recommendations when we get to the end. I've spent 30 years in this business. It's the only way I've ever done it. This is the only institution I know that

I would have come to work for that meets that test. And I don't think you'll find a single bit of evidence to impugn either the nature of the study or the outcomes.

Q: So your answer is no.

MR. BERTEAU: Right. (Laughter.)

Q: Okay.

MR. BERTEAU: Nobody is influencing either what we do or what we say other than the shortcomings of our own intellect.

JOHN WARNER: Since I'm involved in that, I'd like to reply. I first started with CSIS as far back as when I knew Dave Abshire. He put it together. I didn't say we – he. And when I was chairman of the Senate Armed Services Committee, there were certain critical periods at that time when I felt the United States Senate, and indeed the full Congress, needed an independent study.

I turned to CSIS to perform that study. I was privileged that Gen. Jones headed the panel. So from the get-go, to the extent I've had involvement in this, I can tell you this team behind me was fully independent and had I ever got in their way, they'd have stiff-armed me and I know it. (Laughter, applause.)

MR. BERTEAU: I think, though, you know, the question really is a question of process, but I think that probably the more important measure is the outcome. And I think I'm happy to let the study when we're finished stand for itself and then any who have any questions about either the validity or the accuracy of the connection of the analysis to the findings and conclusions and recommendations, we can certainly have that discussion there. I hope that answers your question to some extent. Okay. I think I had next promised to – we had somebody in the middle here? Yes, sir. Right there. Thank you.

Q: Thank you. Ted Kronmiller, consultant. You've noted in your study that the market for satellite launches is essentially for the foreseeable future. I think you've noted as well that there's ample capacity currently to launch what is expected to be available for launch. In addition, there are going to be a number of new entrants and perhaps a reentry of an old outfit, Sea Launch.

And the question that comes to mind is when you identify the risks, such as the political risk that France may change its policies to the detriment of the interests you see at stake here or that may be a failure among the mature and, frankly, fairly resilient systems that exist currently. Have you quantified that risk?

Have you attempted to see how realistic it is that France, for example, would change a policy in a way that would injure U.S. national security in this regard? And have you looked at how much of an interruption would actually occur in the event that one or more systems comes down? Thank you.

MR. BERTEAU: That's an excellent question. I don't think that we have successfully quantified the risk. I think we have attempted to construct some mechanisms by which we would do that quantification. At a minimum, I think what we need to do is to sort of rank order them so that you've got some relative priorities of risk inserted there. But quantifying it would require a level of sophistication of probability and outcomes that I think are probably beyond the scope of this study.

But what I think your question points out is a more fundamental issue, which is we can apply sort of supply and demand and economic analysis to this situation as if somehow that's going to give us all the answers, when in reality it's only a very limited part of the overall equation in terms of both opportunities and decisions for individual companies, countries or users.

And the political dynamics and the government-related dynamics that come into play, if in fact, we really do have flat demand – and I think one of the things that we intend to comment on is the reliability of that flatness of demand as a projection because there are things that could change it – and an increasing number of potential suppliers for launch, most of which are state-supported and state-supported for reasons that have something to do with something other than economic return on investment, that's a very different way of analyzing and prioritizing. And I think folding the risk and the threat associated into that is even harder. So you know, I don't think we've got that sorted out yet. Greg, do you want to add anything to that?

MR. KILEY: No, I think that's part of the next step is to try and put a little more rigor to the risk sets and the relative – not an absolute figure – but the relative risks involved.

MR. BERTEAU: And you know, Dr. Hamre suggested that you were all here to work today. And I would suggest that any of you who can come up with a good approach to do that, I will be glad to double your current salary. (Laughter.) That offer is not to my staff. (Laughter.)

Q: Thank you. Marjorie Chorlins, Lockheed Martin. It's been a while since I've had to exercise my Evelyn Wood speed reading talents. (Laughter.) So I confess –

MR. BERTEAU: That's why we give you a whole month actually.

Q: Thank you. So I confess I haven't read – (chuckles) – the entire thing just sitting here. But the question I have actually is sort of at the opposite end of the spectrum of the gentleman's question, which I think was rather specific. Mine has something to do with a much messier topic and that is Congress. (Laughter.)

And the political element that needs to be factored into whatever analysis is conducted here. Now, I did see a couple of references – in my quick review – to some of the activities that Congress has undertaken with respect to export controls in particular and hope that we'll see the Senate acting on returning jurisdiction, et cetera.

My question, though, is to what extent do you anticipate your report will factor in what is inherently a messy component of the policymaking process and that is the very intensely competing concerns on Capitol Hill around not only protecting, you know, discrete, district-specific elements of the industrial base but larger concerns about national security, especially with respect to specific countries.

MR. BERTEAU: The larger national security concerns – and both with respect to export controls and with respect to some of the other congressional actions – CSIS has had a long-standing change advocate position on that, dating back through a number of studies over the last decade and beyond.

And of course, our president and CEO has been on the lead of that. As he puts it, he has already undertaken three kamikaze missions on export controls and is about to undertake a fourth and perhaps the target will be better identified and established this time. And my group has a similar track record, including a report that we put out in the spring of 2008 as well. We are in the middle of a host of activities related to try to move the ball forward on that.

It's not at all clear to me that that will end up in a report because I think we're more at the stage where we're interested in providing a forum for debate and collaboration. I was going to say compromise, but that's usually a bad word, even though it is ultimately what we have to do amongst all the various competing elements, both inside the administration, with the Congress and those handful of other folks who can contribute intellectually without biasing the outcome.

I think we're in a unique situation in terms of the potential for real successful change here for a host of reasons: We're early on in the administration. We have a very dynamic and capable Cabinet officer who is pushing hard for change and who's had a track record of being somewhat successful in the last few years for the things he takes on. We've got the changing technology and global economic dynamic underway.

We've got, I think, a clear recognition that we have the potential for national security harm from failing to change as opposed to national security benefit from failing to change, a number of other reasons. I think we've got – the nation faces an opportunity here and even the Congress will recognize that and I think there's a potential.

Whether or not there's enough time left between now and the end of the 111th Congress to succeed or whether what we're really doing is setting a very capable and thorough and comprehensive stage for the 112th Congress to pick something up next year, you know, is anybody's guess.

I once stood up in a public platform in July of 1996 and guaranteed the audience that there was no way that welfare reform would pass that year. (Laughter.) And six weeks later, this president was signing it into law. So I don't really want to predict where momentum will go. But I think the stage is very well set. The issues are very well engaged and this will play clearly a part.

When we put out our 2008 study and, as I mentioned, we started looking at the industrial base and ended up coming to the conclusion that export control reform was a real – both a fundamental cause of problems and a real driver for dealing with them, we said at the time that space and the space industry in general and particularly key elements were like the canary in the coal mine.

And you really had to look because even though the dollars were fairly small with respect to overall national security expenditures and the national security technology environment, the relative importance of that contribution, both to overall national security and to the national economy, was way beyond the dollars being invested and spent in it.

And that if we were losing our technical edge there as a nation, both from a security point of view and from an economic point of view, that it really would make you ask, where else are we losing and what are the potential consequences there? So it's bigger than just a space issue. I think it's a very strong signal, but it's also potentially a pretty strong horse to pull the wagon. I hope that responds to your question. Greg, do you have something else?

MR. KILEY: Yeah, I just wanted to add two seconds because I've not been at CSIS as long as David. I've only been here 18 months. And this is about my fourth effort that I've participated in, but one of the things CSIS prides itself on – and you can correct me if I'm wrong – is the analysis of practicable solutions, things that are actually feasible. And one of our criteria for the evaluation is this feasibility question, which goes to all of what David was saying. And I wanted to just stress that point.

MR. BERTEAU: On the side here, yeah. Right behind you. Phil.

Q: Thank you. I'm Phil Spector with Intelsat. And I wanted to start by just saying Intelsat is the largest purchaser of commercial satellites in the world. We're also the largest purchaser of commercial launches in the world. So we obviously welcome this study.

I wanted to take exception with the statement that was kind of made in passing by the woman a little while ago, to the effect that, somehow, having the Chinese a part of the normal commercial launch market would kill innovators like SpaceX. Intelsat is one of the largest fans of SpaceX, for obvious reasons. We want more launch alternatives, and SpaceX is part of that.

But to say that, somehow, by protecting our domestic market, we're going to get there, and that somehow, by not having competition and distorting the normal workings of a commercial market, we're going to somehow have a better outcome for somebody in the U.S., when we haven't had anybody in the U.S. succeed at commercial launch in many, many years, is just wishful thinking.

Intelsat buys all of its satellites from U.S. manufacturers – from Boeing, from Orbital Sciences, and from Loral. We buy none, unfortunately, of our launches from U.S. providers, because there are none available. We had one commercial launch on the Atlas rocket last year; that was something that was ordered many years ago, and in fact, took a very long time, and with many delays, to get up in orbit.

We buy all of our launches from the French and the Russians. And we would like to see, for that reason, a lot more competition in this marketplace, of all kinds. The China problem, particularly, though, is one in which I think Dr. Hamre's point before, about the law of unintended consequences, goes into play. You mentioned – and it's a key part of your study here – the U.S. aerospace industrial base.

One of the unintended consequences of current China policy is that we are directly harming the U.S. defense and aerospace industrial base. What's happened is that foreign satellite manufacturers – Thales in particular – have designed around the ITAR requirements that prevent launch on a Chinese launcher. They offer ITAR-free satellites. Those satellites – the ITAR-free satellites – mean that there can be no components manufactured in the United States.

Someone mentioned Congress earlier. Interestingly, component manufacturers for satellites are located in 49 of the 50 states. So there's some political interest here in strengthening the U.S. defense and industrial base as it comes to manufacturing satellites. We don't help that at all by encouraging foreign satellite manufacturers to design around U.S. components. But that is one of the unintended consequences of current policy. I don't know to what extent your study addresses that. I haven't had time to do my own speed reading. But I'm hopeful that the final study will address that point.

MR. BERTEAU: I'm mindful of Sen. Warner, when he would occasionally look down at some of the lesser mortals who were members of his committee and say, Senator, is there a question in there? But I don't think I detected, actually, a question that I have to –

Q: At the end.

MR. BERTEAU: Oh, at the end there was a question – whether it's in the study, or not. To a limited degree, it is, but I think, Phil, you'll see it much more in the results of the analysis. Because it's clearly embedded in at least two, and perhaps three, of the option sets. Options one and, I think, to a lesser degree, options two and three will all address those – that question of whether it's in the study or not.

I was nervous because I kept thinking you would get to the end and there'd be a question mark and I would have not paid closer attention to the front end of the sentence, there. But I think – I hope that responds to your question. You won't find it to your satisfaction in this version of the report. You will find it teed up, I think, to the extent that we'll take that on. Let me go with the person in the back, and then I know I forgot at least one more over here. Before I go back for round two with anybody, I'll try to get the round ones first.

Q: Hi, I'm Marcia Smith with spacepolicyonline.com. I'm just curious about why you decided to limit your study to medium and large payloads to geo (ph) instead of looking at the whole launch market. As the table in your report shows, there does seem to be a fairly healthy forecast for NGSO launches in the future. And I'm sure you're more interested in the future than in today, so why did you do that?

MR. BERTEAU: We are, and the reason we did is because our initial assessment was that, that's where the stress in the interface between both demand and supply, and on potential government involvement, came into play. I think we'll have to look, as we do our continuing evaluation, at the sensitivity of that restriction to whether it changes outcomes if we were to expand that restriction to the smaller.

For non-geostationary orbit though, I think the fundamental requirements just don't meet – I mean, our basic thrust is starting with the national security implications of that. And from a – that's where the prime emphasis is, from a national security perspective, in terms of both the domestic capability that national security relies upon and the commercial, global capability that national security relies upon. Those were our two fundamental – do you have additional – all right. I think I have an unanswered person over here. Please raise your hand if you think you're in line and I haven't called on you, yet. There's one there, one there and one there. Okay, good.

Q: Speaking of Congress, I'm Dan Ells (ph) from the Congressional Research Service. And the question I would have – I'm basically a quantoid at heart – a methodologist – and looking through here, I noticed that, as far as hinging the arguments on ITAR, impact of export controls, et cetera, et cetera, it seems to be a little thin on the actual data that would back that up.

And I'm currently undergoing, or going through a literature review to try to ascertain if there are any studies out there that actually use hard data on the impact of export controls on the defense industry in general, and space in particular. And I'm wondering, to what extent have you found some actual, hard data on not only the dogs that bark – let's say export licenses that are denied – but also the dogs that don't bark?

Industry has stated anecdotally many times, and in many studies, that export controls are adversely impacting our ability or willingness to try to export. Well, there is no data to back that up, unless you can provide it. What export licenses do you not ask for because of the current structure of the system, et cetera? So to what extent will your study pry open that particular box?

MR. BERTEAU: Dan, you have raised probably the key, most unsatisfying element of this whole thing. Our 2008 study started on the premise, based upon the survey data that, that study was done on – and it was government survey data mandated and collected by the Commerce Department, analyzed by the Air Force, in collaboration with us, on that study. And the smoking gun is very hard to find.

I think the way the co-leaders of that study is, we can't find the smoking gun, although the smell of gunpowder is in the air. But the reality is that you can find anecdotes, but you can't array the data in a way that CRS would certainly find satisfactory. And my sense is that we're still not at the point where we can prove the case.

I'd be happy to be proven wrong here. My concern, though, from a policy perspective is, by the time we get to that point, it's too late, and it becomes an irreversible dynamic. What we've got is a lot of – I guess, you know, I'm not a lawyer – but circumstantial data. The decline in technology share, revenue share, share of patents, the fundamental premise, unprovable in a direct way, that new technology developments will come elsewhere.

But I will cite for you a parallel that did actually have data. I had the privilege, a couple years back, of chairing the National Academy of Sciences study looking at printed circuit boards and defense reliance on printed circuit board – and in many cases, these are neither printed, nor boards, but they do still have circuits. And there, the global market has clearly gone in both of the directions that I described earlier – away from U.S.-dependent to global market – U.S. has, maybe, 3 percent of the global market share, now. It used to have 50 for many years and, at one point, had 100.

And the increasing, or the diminishing role that defense plays in that process – DOD is probably, you know, 30 percent of the U.S. market and 1 percent of the global market. Actually, I probably have those numbers too high. And all of the new technology developments are for the consumer commercial market, which doesn't really care about 100.0 percent reliability. Your cell phone fails; you throw it away and you go buy another one. In fact, they're kind of happy if it fails, just not too quickly.

And very little has to operate in areas of high physical demand. There are commercial industries that do replicate both the demand for 100.0 percent reliability and successful operation in very extreme environments. And some of those operations have clearly demonstrated the ability to have end-to-end supply chain control over the critical elements of technology that go into – even the critical subcomponents of their printed circuit boards. And DOD has not learned the lessons from those other technologies.

One example, for instance, is the medical devices industry, which has a fundamental need to have that reliability. They, as luck would have it, have a cost structure that allows them to recover the cost, because we'll pay anything it takes to keep us alive. And they also have a tort structure which will make them pay anyway if they don't. And it's hard to replicate those for DOD.

But there, it's clear – and you know, the evidence would satisfy even a quantoid – that the market's gone a different way. We are buying parts – DOD is – with part numbers and we have no idea where they came from, what's in them, or what they'll do. They just have a national stock number stamped on them. And we're using them. And they're going into critical systems.

We don't do that with space. We're a little better than that with space. Actually, now that I think about it, some of those boards may be in some of our satellites, but we won't go there today. That's as close to a smoking gun as I can come, but it doesn't prove the case on export controls. In fact, it almost proves the case other than that, because these are commercial, consumer kinds of items that have essentially stayed outside the bounds. If I'm not careful, I'm afraid I'll create an opportunity for Congress to set up a new wall here, and then we won't be able to do anything in that regard.

We do actually have indigenous, domestic fabrication plants that serve the DOD market at remarkable inefficiency, enormous cost, dramatically reduced performance and, in many cases, not even as good a reliability. That's not the answer. That never will be the answer here.

I'd like to have the same case be made for the launch business, but it's way more complicated than just the components of printed circuit boards, and way harder to get and prove the data. That's the best answer I can give you on that point. I think I had three more in line here – one here in the front, second row.

Q: Jeff Vals (ph), Futron Corporation. Did you look at the role that NASA can play in stimulating commercial launch demand, both with the ongoing commercial cargo programs for ISS and the proposal in the FY11 budget for commercial crew, and how that might further stimulate additional commercial launch demand?

MR. BERTEAU: NASA gave us quite a bit of excitement early on in the process here. We did not anticipate the president's budget decision, and had not incorporated that into our approach at all. And clearly, both at the intersection, particularly at the industrial-base level, of where the manned spaceflight changes in NASA strategy, whatever that ends up being – or whatever ends up funded in the final budget, and its impact on the supplier base clearly has an impact.

I think from a market-driver point of view, there's an impact. I don't think we can quantify that. I actually can't tell you what I think Congress is going to do. And you might could tell me what you think Congress is going to do, but we're going to have to see how that plays out. You know, they haven't even given the appropriations subcommittees their allocations yet, and so I have no idea what running room they have for the NASA budget inside the FY11 appropriations.

So I think we're going to continue to watch that, see how it plays out. I think at the technology level, there's clearly an interplay. But now I'm back to Dick Van Atta's question, which I failed to answer at the beginning, which is, who's in charge of this? And I don't know the answer to that question. And I suspect we'll probably try to tackle that in our recommendations, but perhaps not with a single-point recommendation, but a set of criteria that whatever decision has to be made would have to comply with.

MR. KILEY: Just a two-second follow-up. We started the study, like David said, before the NASA decision, but I think that NASA decision kind of highlights one of our key starting points, which is that the four sectors are inextricably linked, and making a decision in one sector without thinking through the implications and ramifications for the others is not good policy. And I think Secretary Gates was the one that was testifying in front of Congress when asked if he had been consulted. And I think his response was –

MR. BERTEAU: “Not adequately,” was his on-the-record response.

MR. KILEY: That was on the record, and our discussion subsequent to that have not shed any new light on the coordination process for that decision.

MR. BERTEAU: Yeah, more specifically, we haven't found any evidence that Secretary Gates was wrong when he stated on the record, “not adequately.” I think we had one over here

and then one in the middle. Let's try the one on the edge there first, Jesse – easier for you to get to – and then come around the other way.

Q: J.R. Dryer (sp), consultant. I'd just like to start off with a comment on the CRS question, that the academy has produced a book called "Beyond Freedom," not too long ago, on ITAR. If you look in the back and see those tables, some of that data is going to be of – you might find of interest. But what I'd suggest is, you get the director's name, who works over there, and she can provide you with some additional details. I've worked this in the past – large problem has been proprietary information – that you've signed an agreement you can see it, but you can't quote it somewhere.

My second question – second part of this is, I've been – I've had the opportunity to comment on many of those studies that you started out at the beginning, and what I find, both there and here, is a lack of answering the question, where do we want to be? What is that balance between military space, civil space and commercial space? And that's going to change five years, 10 years, 15, 20 years out, and I'm just wondering why you haven't looked at it from that standpoint.

MR. BERTEAU: Why we haven't looked at it from the perspective of, where do we want to be – I think I would characterize that as, you know, we've got this policy that says, "assured access to space," but it doesn't quite answer the question, for what? And the "for what" – I actually think – I mean, my personal opinion here, and I really think this is beyond the scope of the study – but my personal opinion is, we've got a huge vacuum, in terms of what our real space objectives are.

And parts of that vacuum are by default and parts are by decision. And I would personally love to see a broader effort that would tackle that question. That said, we obviously have to assume something. And I think it's incumbent on us – and as you've noted, often been lacking to clarify what those assumptions are.

As we met with a number of the folks who've done some of these studies over the last three, four five, 10, 12 years, particularly those that have had phrases in them about the importance of commercial space in whatever area they're looking at, and then when we've asked them, okay, what exactly did you do on the commercial space, the most common answer we got was, "Well, we didn't really have time to get to that, so we just kind of put it in there."

And I would like to think that, you know, that's – we're not going to have that same excuse when we get to the end here. But I take your comment very carefully and thoughtfully in that regard. We've got time for one last question, and it's not going to be – because I am mindful of the clock, here – but I'll be happy to stay around and take some additional questions from folks as we wrap up.

Q: Carissa Christensen, the Tauri Group. Well, first, let me say I applaud the process that you're going through, seeking input. And I think that a consequence of that is going to be that you are suddenly going from a very challenging data-pull process to a, perhaps overwhelming, data-push process that will be coming toward you.

There are many people in this room who will have comments to make about the complex data sets that you have used. I'll be coming to talk to you about launch prices, which I believe have gone down over the last 10 years, and provide some overview of that, and you'll assess that. My question to you is, do you have the flexibility, if you need it, to take the time to revisit your conclusions?

So you laid out a schedule – I've done quite a few studies – that's a demanding schedule, to get comments by the end of May and then put out your results by June. And I just would like to hear your thinking about how you're going to manage if you get a sea-change in your thinking, or a fundamental change in the data that shifts the way you view things and requires additional analysis.

MR. BERTEAU: That's a great question. And I actually wake up to that question more than once a week. We're going to stick to our timetable in terms of completing this version of our final report, because we think we owe it to the ongoing process inside Washington to do that. But we, from the beginning, have not seen this as an endpoint at which we then put our feet up and say, okay, that's done, now what?

We're both hopeful and anticipating and I think planning for continued effort on beyond that. And whether or not it is a further elaboration of the broader topic here, a movement into some, either, sub-elements or related assessment pieces that come into play – because obviously, this is much more than just access to launch; there's a lot more issues on the table here – remains to be seen.

And I think we'll have to prioritize, depending on, partly, where the opportunity to influence the public policy decisions lie there, because that's our real motivator, and that's what our charter says. That's what we're here for, is to add value and contributions to that public policy debate and to provide the analytical underpinnings to assist there.

I think it's also true, and very worth noting – because if we're asking you to put some energy into giving us input, we have to assure you that we're very comfortable being smarter tomorrow than we are today. And we're not going to be wedded to any place where we are right now if, in fact, the facts and our analysis don't support it. So with that, I want to sort of terminate the official portion of this, because we have reached the end of our time. I want to thank you, both for your participation and interest this morning.

Thank you, in anticipation of your continued involvement and input. And if we get overwhelmed, then we'll deal with it as best we can and try to sort out – you know, my line between the spurious and the serious will be determined by the volume, as well as the importance – the content. But we'll do the best we can with all that comes out. And I think your presence here indicates that we're not wasting our time by doing that. And we're very grateful for that. Thank you all, very, very much. (Applause.)

(END)