Before the War

Military Officials predict value of Space in Operation Iraqi Freedom

The following is an adapted, excerpted transcript of a Department of Defense briefing on Space support to warfighters, given just a few days before the start of Operation Iraqi Freedom. MG Judd Blaisdell, director of Space Operations and Integration for the Air Force, and COL Steven Fox, Director of Army Space Support, gave the briefing. A question and answer period for attending press followed.

Blaisdell: Good morning, ladies and gentlemen. You have a great opportunity today, a great opportunity to see how our Space forces make a difference in the fight. And that's what I'm going to spend a few minutes with you on today. I run Space Ops for the Air Force, so let's get right to it.

Ladies and gentlemen, Space truly is a worldwide mission. We've got 33,600 folks spread in 21 different locations here in the United States, and 15 places around the world. So you're dealing with a real synergistic effect here. It's not just the continental United States.

Let's talk a little bit about the advantages. And I've given them to you here somewhat up front. I'm going to go through each of them and give you really what Space does for air, land and sea. It's a force multiplier. We're the number-one Space-faring nation. And here is an opportunity to not only move from day-to-day operations but to continue to make a difference in any battle that we enter. Air, land and sea is used to working together and has for many, many conflicts. Space over time now has — since Desert Shield, Desert Storm, which was really the coming-out portion of that — has really made a difference. And you see it today in Operation Enduring Freedom in Afghanistan. So an opportunity here to really make a difference. We'll talk a little bit about that.

(A historical overview of the military's Space accomplishment followed. The transcript below takes up with the current era. Blaisdell's comments were accompanied by a slide show.)

What I've shown you here is imagery. Here is an an al Qaeda camp. We've got Serbian garrisons. At the bottom left, we have Iraqi buildup of one of their missile sites. Ladies and gentlemen, these images are not only the products of military satellites, but also that of a number of commercial satellites available They can get you down to one meter or better. The commercial opportunity at imagery is important, and the responsibility for its contracting rests with the National Imagery and Mapping Agency.

Civilian imagery as well as military imagery gives us that look at the battlefield that's so necessary.

The high ground. Here is the importance of weather for all services. You would no more go into a battle in any region of the world without weather information than a number of the other capabilities I've shown you. For the Army, obviously, they want to know moisture and soil content. They don't want their tanks bogged down. The Navy needs to know winds and sea state; if you're in a cold climate, iceberg opportunities. But those carriers point into the wind and you need to know all of that type of information. Obviously, the Air Force, we're not going to do refueling operations in thunder storms. So, very, very important. Contrails, for example. What's the temperature in the air? We don't want to show flight contrails of our aircraft coming in. So very, very important opportunity here, the Defense Meteorological Satellite Program that we have up there.

Ladies and gentlemen, nobody comes close to us. Your air and Space forces are extremely dominant. We control the high ground. Air, land and sea is better because Space forces are there, and we're getting better and better at it every single day. It's — a machine-to- machine interface that we're driving to. But as I've shown you here — and soon Colonel Fox will give you the Army side of it — it's a good thing that the United

States has the Space capabilities that it does. And I pity the enemy.

COL Fox.

Fox:: Good morning, everyone. Appreciate the opportunity. I'm Colonel Steven Fox. I'm the director of the Army Space Program Office, but I'm also the project manager for the Tactical Exploitation of National Capabilities, often referred to as TENCAP.

Today Space enables virtually everything we do, from detection of missiles immediately upon launch, so we can prepare to intercept them, or to deal with the effects, if necessary. We use long-haul communications for command and control, and we collect data for analysis. And we also use Space for dissemination of intelligence capabilities.

We use GPS for other Space-based systems to locate targets, and as you heard before, we use them to guide our weapons. We can also keep track of supplies, and we use them for logistics operations. Recently we're using the Army track system, as an example of that, and of course we use Space-based systems for our navigation.

The Army really considers themselves the largest user of Space capabilities. And most recently, our Afghanistan involvement highlights how much we do rely on Space. One of the systems, the Tactical Exploitation System, combined some of what we call TENCAP capabilities into one single multi-intelligence capability where we're allowed to merge many different pieces of information together. We saw it for the first time in real world operations during this Afghanistan operation.

We also fielded a new system called Grenadier BRAT, which is what we call a Blue Force Tracking device. This allows us to keep track of our soldiers who are way beyond line of sight of normal communications. It's important, as you will understand, in the modern battlefield with all the different actions that are going on and how vital it can be.

We also fielded the Joint Tactical Ground System, often referred to as JTAGS. This is a system that we use in concert with some of the sensors that you just heard about. It allows us to disseminate missile data warning very quickly to the soldiers so they can take the appropriate action.

We also deployed for the first time Army support teams, which were well received.

But primarily, the bottom line is Space ensured that we had an uneven playing field in favor of the United States and our allies. Space is fundamental to the way Americans are going to fight.. And the true meaning of air and Space is shrinking the time it takes for the attack chain, and we're changing it to an instantaneous attack chain.

Question from the press: Can I just ask one quick thing, while you're on keeping track of soldiers. They carry a small transmitter, right?

Fox: That's correct.

Q: And it communicates with a satellite?
Fox: Correct.

Q: How big is it?
Fox: It depends on the version, but we have various sizes in various platforms. Whether they're on aircraft there's one version based on air-worthiness requirements, and then there's man-packable versions.

Q: And do they carry it in a pack or on a belt?
Fox: Yes, to both. They can — it depends on the version that we have available. One of the essential tasks that were identified by the Army Chief of Staff was to enable situation understanding — what we call "off the ramp." What this requires is a situational awareness and an understanding — the instant we are alerted at home station — that we're going to be deployed. We then continuously build a knowledge base through the deployment process so that when we conduct early entry operations, whether they're in a hostile or permissive environment, we understand what the situation is. Space-based capabilities are the key enablers that allow us to do this. The Space environmental monitoring of weather that you've heard about — plus mapping and terrain analysis — brings us up-to-date information so that we can understand the terrain and the climate of a distant land before we ever arrive in fact.

Additionally, if you combine this with intelligence support from our National Imagery and Signals Intelligence Systems, it allows us to bring to the warfighter these capabilities that provide increased detail and information of enemy activities, and to support our intelligence preparation of the battlespace. The uses, in essence, help protect the soldiers and making them more effective.

If you amplify the situational awareness along with the greater standoff, the more rapid, accurate warning, increased accuracy and weapons to ensure communications of increased military effectiveness, we have increased the lethality and the survivability of our soldiers on the battlefield.

Q: I have a question for each of you. You talked about what would happen to communications in military operations without Space. Could you describe what threats exist to Space capabilities? I know this is part of the Space-control thing, but is there anybody out there that has the capability, I don't know, like an Electro Magnetic Pulse or something, to sort of shut all that down?

And for the Colonel, could you address what we heard a great deal about during Afghanistan, of soldiers buying off-the-shelf satellite communications devices to bring with them; why they did that; if you encourage that or if that's something that you think you've taken care of, that they don't need to do that anymore?

Blaisdell: Okay, great. I think your question was, are there any threats out there against some of our communications systems and what not. There are a number of threats. And there's always an opportunity for an enemy to perhaps jam a satellite or try to blind it in some way. As to the specifics of that, you know, we're getting down into the weeds in the tactical side of that; I'd prefer not to do that. But that's why you need the Space situational awareness. As I was telling you, you need to be able to understand whether you had a problem with your satellite out of natural occurrences or whether or not somebody was intentionally trying to mess with your satellite. And so we'll be into trying to detect that.

Q: How often do you see that ever? I mean people messing with your satellite.

Blaisdell: Let me try to demonstrate this. I'll use an example

The Army really considers themselves the largest user of Space capabilities. And most recently, our Afghanistan involvement highlights how much we do rely on Space. One of the systems, the Tactical Exploitation System, combined some of what we call TENCAP capabilities into one single multi-intelligence capability where we're allowed to merge many different pieces of information together. We saw it for the first time in real world operations during this Afghanistan operation.

that General Estes used when he was head of Space Command.

Most of your communications satellites are out there a long ways. They're out in geosynchronous orbit, about 22,300 miles. Don't hold me down to the exact mile, but pretty close. It moves as the Earth moves. So we're geostationary.

Within that belt, there is an opportunity for countries to lease slots. The country of Tonga did that and the country of Indonesia did that. And there was, many years past, an incident between the two countries where you had one country ask the other country to turn off its satellite and quit engaging in activity that would affect the country. The country refused, and so the other one jammed their transmission. This did not include the United States. We had nothing to do with any of that. But you can see in the world of commerce, that we have instances where one country and another country may disagree and try to take action.

Q: These were commercial satellites?

Blaisdell: Yes, they were. And so the ability of other countries to perhaps try to disrupt at times is there.

Q: I presume that our satellites are resistant to Tonga's jamming?

Blaisdell: Some of our satellites may be resistant. Others may not be. But —

Q: Can you say whether the Iraqis — whether that's within the capability of the Iraqis?

Blaisdell: I knew you were going to go there (chuckles) — first of all — the briefings that you get — Space-wise, ground-rule- wise — are the tremendous advantages of Space. I want to try to avoid any tactical-type questions in terms of what we might do in Iraq, if I can. But I'm sure one country or another would try to…

Q: I mean, if Indonesia is capable of jamming a satellite, is it fair to assume that Iraq also would be?

Blaisdell: The capability of countries to attempt — to attempt — to jam — like you're out there 22,300 miles and the link — you know, they could possibly attempt it.

Fox: I owe an answer here on the GPS receiver aspect. I have heard reports that soldiers have bought what we call off- the-shelf GPS receivers. I believe there's really two reasons for this. And it's kind of like your favorite cell phone — everybody's got a favorite brand of cell phone. I believe that soldiers that are used to a commercial product like to have it and they use it. That's one aspect.

The second aspect of it is, is that — and I used to work for the GPS Program Office earlier in my career — is that when we build our military GPS receivers, we build them to counter threats, and in that process of doing that, the size increases slightly in order to accommodate some of the issues associated with threats. And so if you're a soldier, and you're trying to keep as light as possible, you might grab your personal device prior to taking the true device that has been issued to the squad or to the platoon or to whatever level.

Q: Isn't that — don't you discourage that?

Fox: Oh, I believe it's discouraged. But my point is, it's like soldiers also buy cots when they go overseas; they buy themselves a new mattress also. I mean, it's just

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— it's their money; they can buy what they want. But ultimately, if a threat does occur, they can always rely upon the military-procured system, which is designed to counter the threats.

Q: Another question for Colonel Fox. One of your charts says the Army relies on Space for tactical imagery. In what instances would you use satellites for tactical imagery and in what instances would you use UAVs for tactical imagery?

Fox: In the discrimination between how and what sensor you're going to use in order to gather data or information - it's determined by a process, and in the Army we call it the collection manager. The collection manager has at his disposal tools to determine what is the best asset to use to determine which makes sense.

Heuristically, you can understand that if we're not in a particular theater yet, it's nice to have something that has reach; that you don't have to have folks on the ground or near the ground in order to receive what information you need. So you can see immediately maybe in an early operation you may prefer a system that can have access to an area that perhaps you're denied. And as we gain access to an area, you can see easily how perhaps airborne platforms become more readily available, and then even after that, you can see perhaps even tactical systems become more prevalent.

Q: So when you're in theater, you prefer to have organic assets, not Space necessarily?

Fox: Again, I have to say it depends; it depends on the operation and the situation.

Blaisdell: You have a synergy between both of them. That's why you have a great opportunity with a combination of air and Space assets. Which is why Secretary Roche, Mr. Teets, General Jumper, General Shinseki, and Admiral Clark are pushing so hard to bring those together. And I think they're doing a pretty good job of it. If you're over the theater with Predator, it provides you a very focused look. Global Hawk, I think you've read material, will map something the size of the state of Illinois. And then the higher up you get, obviously, you can get a better expanse.

So the access part that Colonel Fox talked about depends again: Is the enemy controlling the area? Can we fly weapons-free, if you will? That's what dictates.

Q: General, I wonder if we might just go back to Iraq very briefly, because I —

Blaisdell: And I know you want to, don't you?

Q: We know what the Chinese and other countries have active, electronic counter-comms programs that they're building for the 21st century. Could we ask if the Iraqis — I mean, the Iraqi military seems kind of a depleted and demoralized bunch. Are they in any way into this? Did they try to do it during the Gulf War, for instance? Are you aware of the fact that not only might they try it, but are they likely to try it? And did they show any abilities during the Gulf War in this kind of thing?

Blaisdell: I'm not familiar with their attempts at trying to do any of that during the Gulf War.

How about you, Colonel Fox?

Fox: No, sir.

Blaisdell: So I am not an expert on all of Iraq's Capabilities, but I will tell you that they're going to have a pretty hard time doing it.

Fox: I would say that we do understand what threats are possible. I mean, we do design our systems from an acquisition perspective. We take them in consideration.

Q: I believe that in the last gulf war the United States bought off the commercial surveillance capability, I guess you would say. Has that happened this time around? Have you acquired the capability of commercial imagery?

Blaisdell: Commercial imagery was bought up. You're correct. The commercial imagery is controlled by NIMA, and all of the activity in terms of what we would do commercial-wise goes through NIMA. They're our collector. So DOD leans to NIMA to control all of that. So I would allow them to answer that question, to be honest.

Q: This is a follow-up to that, actually. How much does that cost? How much money does the Defense Department shell out for commercial imagery?

Blaisdell: Like I said, NIMA handled that. I'll have to take that one for the record on how much we did. In OEF I think we can get you that.

Q: I have a question to do with GPS and selective deniability. Since the entire commercial aircraft industry totally depends on GPS for navigation, do you have the capability to ensure that if you selectively deny GPS, you can do it in such a way that it does not disrupt commercial aviation in a particular region? Or do you have to basically warn that region to shut down commercial activity for a certain period of time? How do you work that?

Blaisdell: America's policy — I thought that you might ask me that. America's policy with respect to GPS selective availability is that we do not degrade this global naviga-

tion support service from its advertised capability, and so we will not do it.

Q: Colonel Fox, you mentioned the tracking devices small enough to either wear on a backpack or a belt. Is this something every soldier going into the Gulf is now equipped with, or is it used in select spots? Or are you telling me every soldier has a tracking device?

Fox: Every soldier does not have a tracking device. There are selected units in selected — I'd say units, basically, that get the devices.

Q: But if you have this capability, wouldn't it be useful, especially in helping to avoid friendly fire incidents?

Fox: Yes, it would be. And it's just a matter of, I would say, an amount of resources available at this time in order to outfit the force, although we have within the last few months made tremendous progress. And we're not really focusing so much right now on soldiers as I believe we're focusing on platforms, because those are the important aspects, we think, right now.

Q: How much are these devices, the individual devices, the soldiers carry, give or take?

Fox: Well, the capabilities vary tremendously. The — one program that I actually run is the Grenadier BRAT program. And this program - the initial buy was about $14,000 per unit, and we did an initial buy of about 400. It was really just a prototype. It was just to prove out the concepts. The world changed, and all of a sudden the prototype became a very important piece of equipment to be used immediately.

Q: And that was used in Afghanistan?

Fox: Yes, it was.

Q: How many more have you purchased since then? Can you tell us?

Fox: Yes. We've gone in for a second buy of another 400. That's of — just of the program that I run. There are other programs out there that are also using the same technology that I'm using, in order to get out to the thing. I can say there's over a thousand devices that I'm aware of right now, based on the same Grenadier BRAT technology, being used.

Q: General, could you talk about what advantages Space provides you for either offensive or defensive weapons? The Missile Defense Agency has started a Space interceptor program. They've got a Space-based testbed that's being built. Can you talk about what your view is and what work you're doing, maybe even in the policy area, of getting this idea out there, getting it kind of cemented as a national policy?

I would tell you that all of the services — Army, Navy and Air Force — are cooperating there. As a matter of fact, my particular folks sit with the Missile Defense Agency in trying to work through just those policies that you outlined, as I know the president has asked for operational capability here in 2004 on the system that General Kadish and his fine folks are putting together. So there's a lot of activity that will occur here.

Q: Well, what about from a service perspective? I just mentioned MDA because they're the first ones who are sort of in that program. From your perspective, what opportunities do you see for the Army and the Air Force?

Blaisdell: There are a number of opportunities. I know the Army here is working — and obviously Colonel Fox can jump right in — but they are working the close-in and mid-course intercept, and have successfully tested a number of opportunities off of Vandenberg (AFB) out there in the Pacific and demonstrated their ability to do that. The shipborne piece for the Navy — and again, mid-course a part of that with Aegis cruisers — is also an opportunity, in my opinion. But I'd let the Navy talk to that.

Air Force-wise, I would tell you that doctrinally, it is offensive/defensive counter-air. And an offensive counter-air issue for the Air Force would be to actually try to strike any threat against the United States or allies prior to them coming out of a silo or whatever. And so that whole doctrinal piece between Army, Navy and Air Force is exactly what we're working, and that's kind of what my shop is engaged in. But that's about as far as I want to go with it because it's still kind of in draft.

Q: General, I understand you don't want to get into the tactical applications of your technology vis-a-vis Iraq, but you did talk about our dominance, your pity for the enemy. Then there's the timing of this briefing, sort of coincidental to the prospect. Are you sending a message, by your briefing today, to Iraq?

Blaisdell: Am I sending a message? I am providing you a rundown on how great your Space capabilities are and the dominance that we have in that area.

Q: What message would you like this to convey? (Laughter.)

Blaisdell: I would — whether it's Iraq or any enemy of the United States and its allies, I would tell you that we are so dominant in Space that I pity a country that would come up against us. The synergy with air, land and sea forces and our ability to

control the battlespace and seize the high ground is devastating. Many of them, unfortunately, don't really understand how powerful we are. And you see several demonstrations, I think, in different areas of that. I would tell you not to single out any countries, but all countries respect the power of the United States and they respect how dominant we are in this region.

Q: General, may I follow up on that just a little bit, picking up on your line about if you're going to make a difference in any battle, can you just sort of specify what it is that might make this battle particularly more successful, say, than 10 years ago in the Persian Gulf —

Blaisdell: Which — which battle might this be, ma'am?

Q: Any future battle you might be facing. Say, in Iraq? (Laughter.) Why — what — any particular thing that you can point to that could demonstrate the power, that would demonstrate the capability this go-around.

Blaisdell: Well, the slides that I have given you — the speed, the lethality, the persistence, the information dominance, the precision, the battlespace characterization, bombs on target, real-time battle management. That's what we're about. And that's what we are able to deliver through Space, air, land and sea, and the capability of all of those to come together. We started that in Desert Storm; we've done that in each conflict since. And we get better, and better, and better.

Q: Isn't one of the major advances you've made since the Gulf War, speaking of instant communications, is, can't you now retarget TLAMS while they're in flight, as opposed to having to target them before they leave the ship, set a target then?

Blaisdell: I'd rather not discuss our ability tactically to be able to do different things. But I can tell you that the Tomahawk Land Attack Missile is a very potent weapon. I just showed you a clip of it there. It does use global positioning system information. Beyond that, I'll let the Navy talk for their system.

Q: Yeah. Could you talk a little bit about how satellite windows and your Space tasking might affect the decisions of a combatant commander? And also, could you talk about whether the Army and Air Force Space have any piece of homeland security?

Blaisdell: On your first question, the windows, are you looking — you want to clarify a little bit more in terms of — are you looking for gaps, or —

Q: It's something I don't understand very well. If you could help clarify for me and for us how a combatant commander is sitting down and what they're seeing in a Space tasking order and how they make their decisions based on things that you're doing.

Blaisdell: Absolutely. First of all, let me tell you that the air tasking order and the Space tasking order are combined, and that any combatant commander, no matter what the theater, is able to look at both of those and understand what we bring to the fight, what Space assets are available when and where.

To help him do that — and here's another change somewhat from Desert Shield, Desert Storm — the Air Force and a number of Army — and Colonel Fox talked to this because he mentioned to you Army support teams. The Air Force has very highly qualified personnel embedded in our Air Operations Centers, Combined Air Operations Centers, or CAOCs. And they have at their disposal on the screens tools that tell them the best availability of Global Positioning System data. They have when, what's the best opportunity for warning, what's the best opportunity in weather. All of those tools that I was showing you here, those prime pillars, are all brought together and integrated in the Combined Air Operations Center.

If they need additional expertise in Space we have a reach-back capability through Air Force Space Command and to their component at 14th Air Force, or SPACEAF, which is at Vandenburg Air Force Base, commanded by Major General Hamel. His folks right there in their Combined Air Operations Center, are able to provide that kind of instant update, if you will, or clarification, for the Space folks that are already in theater.

So you've got great people, a weapons school, qualified individuals that are right there with your air component and Space component commanders. We've got those kind of folks that are with the Army and the Navy and the Marine Corps. And they understand what's available to them. And more and more, this is integrated into the fight.

Q: Are there certain types of missions that, say, would not be flown at a particular time or on a particular day because the constellations might not be aligned the way you'd like it, or do you have pretty much persistence to do whatever you want whenever you want?

Blaisdell: We have the persistence to do whatever we want when we want.

Q: And on homeland security, could you just mention, do Army and Air Force bases have any homeland security pieces?

Blaisdell: General Eberhart, of course, has got that. We're working out with a newly defined Strategic Command that Admiral Ellis is putting together. Air Force Space Command, which is now carved out under General Lord, supports both of those component commanders. So when you say homeland security, General Eberhart has that responsibility here within the United States. He is supported. And Admiral Ellis at Strategic Command, with General Lord as his Air Force component, are supporting him in his homeland security duties. That's pretty much how I would characterize it.

Fox: I can only say I'm not familiar with the parts of the command that might have interest in it, but I have received requests about technologies that I'm familiar with, and I've passed that on to those that have asked the question.

Q: Sir, what sort of capabilities or technologies will the Military be providing to homeland security?

Blaisdell: Warning — any warning, which is back to some of the missile defense questions, but warning of any possible attack against the United States. Those sensors. Supporting through Strategic Command, General Eberhart with his homeland responsibilities, for example.

Q: Has your bandwidth capacity improved any since OEF last year? Also, how are you working to manage the capacity crunch that you're probably going to have, and how you manage that and how you get the operators in the field to make that less of a problem?

Blaisdell: The bandwidth has grown. Let's see — let me give you some rough orders of magnitude, okay? I think we're at 100 - 250, I think I showed you on a chart, for bandwidth, Desert Storm. That was roughly half a million troops. And now we're at probably — Operation Enduring Freedom, our allied force I believe was two and a half times that, roughly. And then — and now Operation Enduring Freedom, less people — six times the requirement.

And in answer to your second question, what are we going to do about that? What you see out there in 2010 and on is the transformational communications system that we're trying to put forward that has to do with laser packaging, a push-pull Internet in the sky, if you will, where you can go up and pull down information if you need it, or push information if you need it. And that's kind of where we're trying to get to.

Q: But more immediately is where I was going. If, say, a major contingency comes up in the next week or two, there's obviously, you know, 250,000 troops that are involved. You know, if you're going to have a major bandwidth crunch, how do you work to deal with that?

Blaisdell: What many folks may or may not know is that our commercial carriers assist us in terms of the broadband width responsibilities. Video-teleconference type, message-processing type. Very similar, the satellite we just put up, the Defense Satellite Communication System, is a broadband type operator. Let me give you some statistics.

Within Kosovo, I believe approximately 50 to 60 percent of our broadband capability was off commercial transponders that we leased. I would expect that commercial activity to occur again here in the event that we had any hostilities somewhere.

Q: There's been some reporting about the availability of relatively cheap GPS jammers made by Russians and otherwise. How real is that as a threat to targeting of our weapons and that kind of thing?

Blaisdell: There has been a lot written about possible availability of GPS jammers. We are the country, obviously, that puts up GPS. We've done a great job of doing that. We understand the system. We understand the pros and cons of the system. We design in what's needed to be able to operate that system, especially militarily. And we have opportunities, if you will. We have tested that possibility. And let met put it this way, I think General Leaf mentioned to you not too long ago, I think he said any enemy that would depend upon GPS jammers for their livelihood is in real trouble, is in grave circumstances, let's just put it that way — if that's where you're going with the question.

Q: Yes, a related question. The system's getting old and the satellites haven't been replaced as quickly as you had hoped. I notice in some parts of the world when I use the military system, that it's taking more time to grab satellites now than it had been even a few years ago. Can you guarantee to the troops that when they need GPS, it will be there for them?

Blaisdell: I can tell you, ma'am, that the constellation we have is better than the requirement that we generated — right now.

Q: In the 1970s.

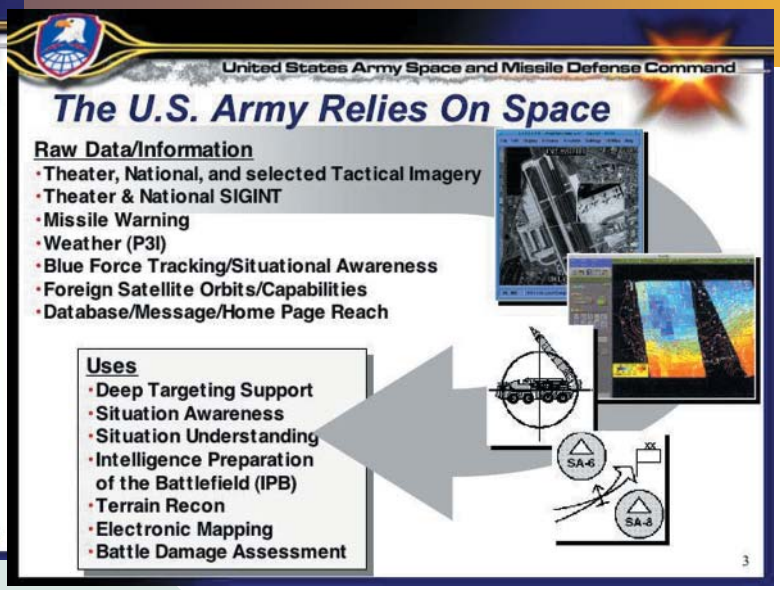
Blaisdell: Much better.

Q: The requirement you generated many, many years ago-

Blaisdell: Much better.

Q: — when things were very different.

Blaisdell: You know that the



requirements of the civilian community are pretty demanding as well. And you know what? They are absolutely ecstatic with the types of accuracy, timing and precision that they get. So I can tell you, since global positioning system's up there at 11,000 miles in the Van Allen belt, not easily accessible in low earth orbit, that our satellites are doing pretty well. And, as a matter of fact, we're looking at a follow-on system called GPS-III that you'll hear Mr. Teets talk about, which also has a number of discussion items in it that goes to your question on jamming, those kinds of issues. GPS-III is even better than what we have today, and what we have today is absolutely superb.

But, I have to tell you, the enemy doesn't stand still. I mean, they get better, systems get better, and you're right. You know, there's a life span on those GPS satellites. And they get old. And they deteriorate. And we need to replace them . GPS is not just U.S. Because the United States has really made it an international resource, we need to deliver on that. And we will.

Q: General, just as a follow-up, does thick smoke or intense fire have any effect on GPS, or would you send the same message, anyone relying on fire as a defense mechanism would also be in trouble?

Blaisdell: We'll have no trouble with the GPS. No, ma'am.

Q: Sir, I've been thinking about your discussion about precision and timing and with more and more people using your Space application. What changes have you made either operationally or doctrinally to make sure that the critical information or data that's being sent by an individual — perhaps on a horse — can get through the enormous clog to the right person so a precision weapon can be used? And the same question would go to the Space tasking order. Are you considering pushing down controls further down than the — you know, the commanders talk up at — the combatant commanders' centers?

Blaisdell: I think you're getting into the issue of encryption, perhaps? We have an —

Q: Not really. If the sergeant on the horse takes a digital picture, sends the information, and there's other soldiers with other information, what makes his information go faster so that the target he's looking at doesn't move by the time that critical but specific data gets there? What good's a precision weapon if the things move? How does he get through this bottleneck that we keep hearing about since Desert Storm?

Blaisdell: You know, a lot of that is not just technology. A lot of that is tactics, techniques and procedures. And we know where our folks are, we understand what they're engaged with. And the priority associated, whether you are engaged with the enemy in a particular target area, you're going to get the priority. And so the frequencies that you're on and the systems that you have through a Combined Air Operations Center or the Land Component Commanders Center, who is engaged in the fight and who has the priority — you know, everything is a priority, but we understand — we have good situational awareness. I think you're making my point here in terms of Space assets. You need good situational awareness, and that's what Space will provide to you.

Before, we had to fight a number of those conflicts, and we didn't have a good view of the battle area — real-time battle management. Now, between air resources, land, sea and Space, we have a much better opportunity to do that. We know who needs the immediate opportunity for additional forces — I think is where you're headed with it — and that allows us tactics, techniques and procedures, not always the technology.