

TRANSCRIPT

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Honorable John Young
Director of Defense Research & Engineering
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Q: Welcome to John J. Young, Jr. He's the DDR&E, has been since I guess last November. Before that was Acquisition Executive at the Navy, and before that I guess at the Senate Appropriations, Defense Subcommittee, and before that I forget.

A: I had some industry background before that. Sandia Labs, Rockwell, General Dynamics.

Q: Worked on fighters. So a broad background. Welcome, glad to have you.

As we were talking coming up, I'd like to get you started today on the subject of long ranges strike. The Air Force was for some years going along a path on bomber modernization, envisioning the real no-fooling next generation bomber being sometime in the 2030s with an interim system sometime in between. The QDR changed that and said we want this capability in 2018.

It's very difficult from the outside to see what's going on with that particular project and I'm wondering, is there really a serious effort going on now to develop that capability? If so, where's the focus of that? What's the status at this point? Take a little time and talk to us about that.

A: One step I've taken as DDR&E is to make sure we implement the directive that has the DDR&E team participate in 6.4 programs, which is the stage of prototyping before SDD, systems design and development. So we recently sat down and had a discussion with the next generation long range strike team from the Air Force for that 6.4 program.

I think those discussions in general are important. They give the DDR&E team a chance to see where the technologies are and exercise I think my fundamental role, and that is if the technologies have a certain amount of uncertainty we need to make an investment to mature them so that things go into SDD with much lower risk, greater maturity, and the high potential to control the cost and schedule. That matches all the way up to the statement of administration policy that says we want to try to take things to a higher level of technology maturity.

That was the heart of some of our discussions, and you're right, because the initiative kind of got pulled forward the Air Force is in a busy analysis of alternatives phase, sorting out requirements phase, and we want to have a discussion with them about where those requirements bars are because if the requirements bars end up high, particularly on range and other things then we will have to work with them mutually to understand if the engine technology can support that and deliver that range. If not, that will be part of my role, is to drive the S&T program to make investments in engine technology so that the program, when it gets to Milestone B, can deliver.

As I've told my team, and probably many of you are aware, there is a new law that says the acquisition executive has to certify the technology readiness level programs of Milestone B. I've told my team success is not going to Milestone B and saying no you have not met the technology readiness level. Success is doing early assessments, as early as absolutely possible, and updating those assessments along the way so that first and foremost we all get to Milestone B and say yes the program is ready to go. And equally importantly, along the way we use that as one of the guides to drive S&T investment. Make sure it's in the right areas, in the right amounts so the department can take mature technology forward. That's kind of at least the key piece of where we are in the next generation long range strike. They've got to better solidify the requirements and we want to work with them to understand what technology lines they will be pushing to make sure they meet those requirements.

Q: Well, in this briefing that you had with the Air Force you mentioned range and engine technology and that they want certain range and make sure they got the technology program for the engine. Do you see that right now as the key trade that's going on that they have to work out?

A: I can't say that because I think they're doing a good job of thinking through the full decision space. I mean is there a chance this vehicle will be fully manned or unmanned, to what degree would you need aerial refueling to make those range requirements, or could engine technology and design efficiency in equal size let you meet them will lesser refueling? The whole trade space is pretty open and I think they will also look very carefully at what they think the signature of the vehicle needs to be for survivability.

I think right now the trade space is open. I hesitate to single out any one area other than to say at least one for sure starting area is if they put the range bar pretty high which has a lot of operational utility, we know right now in the engine technology might or might not support that depending on where they put the range bar.

Q: Does the Air Force rule anything out? Hypersonics, for instance?

A: I think they view, I'd rather not speak for the Air Force. I think the trade space is pretty open, but as you rightly pointed out the QDR moved the deadline back. I think some of their initial looks and my own team's initial looks say that hypersonics and things like that are probably going to be technologies that are too far to reach for the deadline.

Q: You have some background in hypersonics. Do you agree with that?

A: Yeah, I don't think that's going to be. I think the Air Force sees the potential for a program further out in the future where hypersonics, or supersonics for sure, might be a player.

Q: One final question. Do you get a sense from your discussions with the Air Force that they're leaning primarily toward unmanned?

A: I don't. I think that's a very open trade space. I think they're, and what we urge them is to be very conscious of cost.

I think even in the technology space there needs to be a business case or at least good reasons for the things you're doing. Unmanned just so you can call it unmanned is not, from my point of view, the best idea and I think the Air Force doesn't come to the table with that view either.

Q: What's the next big thing you're waiting to hear about in this particular program?

A: I asked the team to start working with them on the kind of the bands of the requirements and the technologies that would likely go in to support that and begin to do exactly what I told you. Start to do a quick look, technology readiness assessment now so we can engage the Air Force in dialogue as to what it's going to take in terms of S&T investment so that we can all go to that Milestone B and say mature, ready to go. That's going to be the day to day work for probably the next few months. It's going to take a little time to do that.

Q: Have you given them a deadline?

A: No.

Q: When do you expect it? Months?

A: I think it will take kind of that time frame. I don't have the charts with me. I can get back to you. The Air Force has laid out a tentative B that sets out a couple of years plus I think. I'd like to do this as soon as possible.

I'd like to have some pieces of data to influence the æ08 POM build. I think that's what's critical. Once you miss '08, now you've moved yourself out a year plus.

Q: That is a couple of months.

A: Right. In a couple of months time frame I'd like to have, I doubt seriously it will be final, but I'd like to have a quick sense of where the requirements might land if we can get that and then where the technologies might be an issue against those requirements.

Q: I'd heard a few rumors that the F-22 AESA radar was having overheating problems and that they were having some small mean time between failure. Can you sculpt the--

A: I apologize. I can't do.

Q: I didn't know if that was out of your bailiwick now or not.

A: Really that's an SDD, beyond the full rate procurement program.

Q: How about weaponizing of AESA radars, electronic attack, and perhaps after that the ability to focus the power on something like cruise missiles or that sort of thing to the point of making them inoperable? How soon do you think we'll be able to realize that, and is that an issue that you're dealing with or is that so far off in the future that you're not--

A: It's a hard question to answer precisely because living on the edge of security issues which are probably very conscious of.

Q: Are you looking at that area with some enthusiasm?

A: I think it's normal course of business. I mean there's a potential for us to do a lot of things with AESA technology, but first and foremost do a great job of detecting targets, mapping things. At the current power levels it may have benefits in electronic warfare and other things.

I think we're still some time, probably in years, away from some of the things you're talking about. It's not inconceivable. It's a matter of being willing to generate and devote that power to the radar because a lot of these things you're talking about using you're talking about kind of directed energy things and they are starting to be out there on the horizon. Generating that energy efficiently and getting it out of the aperture still needs some work. I think it's several more years of technology to make sure you're there and ready to put it out there in the field.

Q: One more thing. I was just in Israel talking to the Air Force and they were saying they're starting to back away from the idea of embracing networkcentrics so fully. The reason because of that is they were about nuclear EMP or computer network attacks or communications attack

taking apart some of their networkcentric capability. As a result, they're sort of reversing course and they want to keep manned aircraft in the loop longer and more of them so even if they are attacked and their system is broken down they will be able to still generate a force. Does that resonate in U.S. thinking?

A: Yes, in a consciousness. At the macro level all the way, Secretary England's talked about being very anxious about that very issue. The networkcentric piece has to have strength against information operations and attacks and network vulnerabilities. So from the leadership of the department people have been asked to be very conscious of that.

Then in certain areas I see great merit to that thinking. I think we're starting to think about it. Because for example, in the area of integrated air and missile defense. The Holy Grail would be a single integrated air picture, and I personally have advocated kind of an any sensor, any weapon concept--that any set of things can work together. But you find out there's certain scenarios where certain sensors and weapons would be a very small fraction of the time where you find yourself an operational scenario that that would be realistic. So you shouldn't make the investment to make sure that sensor and that weapon can integrate together. And as you are suggesting, it creates more complexity and more vulnerability in some cases in your network.

I have a team that I call a joint analysis team looking kind of at this issue, not your particular issue, but the networking of DOD systems and getting to better networkcentric capability. What I've asked them to do is recognize we kind of have what we have for the next few years, tell me what the near term road map is to better network together everything we have, and get as much networkcentricity as we can get that's appropriate. Then, also look at the midterm where we're going to have a chance to have new systems come online like the global information grid and other things. What steps do we need to take to make sure we have JTRS, hopefully, and all those other tools? What's the appropriate amount and the steps that need to be taken to get the maximum networkcentricity and appropriate networkcentricity out of that team? We're looking at it with that technical eye.

I guess in fairness more to the side of let's get as much as we can, but then as you look at that we're starting to see places where this investment won't pay dividends because the operational scenarios don't have these two systems working together that often. I think the enterprise is starting to make good choices in that space.

Q: Is that nuclear EMP threat getting higher in your estimation or your worry?

A: I think it's just real.

Q: They're worried about the uranium thing.

A: Right and I wouldn't raise it or lower it. It's real. It's something I think the department's going

to have to take another hard look here in the near term. The department's made an investment in producing rad-hard chips predominately for the satellite programs. They're going to have to take another hard look at the next step toward the next generation of being able to produce rad-hard processors for our programs. I use that as an answer to your question. The threat's real and so it's clear the department, in my mind, is going to have to stay in the business of being able to produce rad-hard and rad-tolerant systems, radiation-hard.

Q: This is going to be the unfair question of the morning. We're going to take a crack at it. You manage or supervise billions of dollars worth of very high technology long term programs.

A: I wish that were true. [Laughter].

Q: At least you have the responsibility for it. Yet, if you look around the world at the places where people are giving the United States fits. They're using very low technology, very quick turnover, Hezbollah rockets into northern Israel, the North Korean diplomatic miseries.

Do you ever pick up the paper and think you're in the wrong business? That the United States can't keep on doing things the way you folks do over there, the very high dollar, long term, milestone [inaudible] effort? I told you it was an unfair question.

A: No, that's a great question. I think I can answer this question, but I think I may be mistaken. You'll let me know right?

The answer is yes and I think a lot of people in the department are thinking about that and recognizing that it's probably not a one size fits all process. I think for high-end programs, Joint Strike Fighter and others, there is a need for some amount of process and rigor, but there's another end of the spectrum where we need to move with much greater agility and quickness.

What I seek to tell you is that I think we're doing some of that. The Congress has been particularly helpful even though this is a challenge in providing some funds that we will invest over the course of the year in emergent requirements and some of those funds are in my office, in the counterterrorism task force and quick reaction funds. Those funds have done some of the very things you're talking about.

Ben Riley and his team have just done a great job. They fielded a biometric tool with the forces in Iraq that let you collect for fingerprints and iris scans and others for people that want to have access to control facilities. That data when combined with other information we've gotten from bad activities has led to the capture of a number of people that have been involved in trying to access controlled facilities and they've actually been involved in other bad activities.

Another tool that's been fielded is, across the board we're working hard at systems that can jam or deal with the improvised explosive devices. There's one program that Ben and his team's

managed where I think they've turned the software, can I get back to you on the exact numbers, but it's something like they've developed nine versions of software to react to how fast the bad guys that are building these IEDs are moving with their techniques to fuse them and fielded most of those in a month or so. So we've got programs that through the help of the Congress and having funds that let us react, we're responding to that.

As you've heard all the way up I think through Secretary Rumsfeld and Secretary England say, it takes a little while to turn the ship but there are programs across the board that are beginning to recognize that. I think you'll see the department try to take steps to do more things in these areas that are global war on terrorism areas and recognize the importance of the range of technologies that are out there. That's one other thing.

I've spent some time with smaller companies. There are some really great technologies available in the marketplace. People don't always know how to get into the Defense Department. They don't always see how their technology can be applied to the new warfighting circumstances we find ourselves in in Iraq and Afghanistan. We have to open that door broader, help them get in, make them feel comfortable, that we can protect their intellectual property. I've got myself and my team trying.

I've had a number of firms in that are being supported by venture capital and others, and we're looking hard at how we can use their technologies to deal with exactly the problems you're talking about. But in that space we have to be agile. Those companies consistently tell me we have a business plan, we're a lean operation, and we're moving. So I think the department has some steps to take even beyond the help we've gotten from the Congress in having flexible cash that we can put on problems and do so quickly and not have to worry about reprogramming and supplementals and the things that are slow to the process because we can't keep the attention of some of these highly capable companies if those are going to be our timelines. I think we know a lot of the problems and we're out there working on them.

Q: That's a fair answer.

Q: Let's go back to the long range strike issue again. I find this 2018 date in the QDR interesting because the quote/unquote plans in the past for building a new system in 2038 or 2044 is almost like an excuse for the Pentagon to study indefinitely and never make any type of firm decisions. With this short timeline, the Air Force and DOD are going to have to make some decisions pretty quickly about what's going to go into this system and what's not.

From where you sit, what is possible and what is impossible, beyond the hypersonics, obviously, to actually have a fielded system by 2018?

You look at these bands of incapacibilities, how will they compare to what's available right now with the existing systems?

A: I'll answer the question the way I view my role as DDR&E, and frankly, the way I view the role that the acquisition team needs to play. I understand that there is a date set out there but it's not in my mind carved on a stone tablet. It's a good date as a marker so let's go and look at the program.

A fundamental issue in every discussion the acquisition team, the research and technology team has has to be taxpayer value. So I will tell you in the discussion I had with the Air Force I urged that they work hard to identify the requirements and the technologies that they think will need to be in the system and we will work with them to understand those to make 2018. But at the end of the day I also urged and told my team we will look at if you move that date either way, for sake of discussion although I think the more likely direction would be a little further out in time, what would that mean in terms of bringing down the risks or creating the opportunity for the system to meet more of its requirements or deliver better capability.

From my time on the Hill and further amplified by my time in the Pentagon, I would not want to let a requirements timeline set date drive cost on the taxpayer. I think that's the wrong way to do it. We will do everything we can to plan to 2018. That's definitely a good marker to be out there. But I've asked the team to look at okay, now tell me, could you do anything faster or if you had more time would the taxpayer and the warfighter get a better product? That's how I left the meeting.

Q: Kind of the flip side of that, though, is that the situation that the Air Force has had with the F-22 and the satellite programs where if you don't lock down the requirements early, things continue to get piled on. Then you wind up with these delays and cost growth and requirements growth that might not even be planned for in the first place.

A: Nothing about what I said was meant to enable that. If you lock down the requirements in 2016 or 2018 or 2020, lock that date down, at that same time you lock that date, my view of the world is you lock down requirements. That's what we march to.

I think one of the things that's been very successful about Joint Strike Fighter is when I had control of it or management responsibility for it as the Navy Acquisition Executive, Secretary England who had experience with the F-16 and Secretary Aldridge saying, had us set up a configuration steering board and my mandate from them in that configuration steering board was no new requirements unless they came with money or an appropriate time phasing that avoided delay and disruption to the program. That is how we managed the program.

I would say to you requirements have been tightly controlled in that program and in fact in some cases walked back because walking them back helped make sure we could deliver a quality STOVAL product. If I gave you the impression that any amount of time, be it longer or shorter, would be a tool, and particularly longer, would be a tool to play with requirements, I'm opposed

to that philosophy. That's one of the problems with acquisition right now.

Q: You mentioned you wanted to open the door wider for small businesses. The Senate Armed Services Committee has a provision in there, the æ07 build that would roll back the preference for cost-plus contracts and stress from firm fixed price contracting. In your world, I guess 6-1 through 6-4, that may have impact on contracts and the business decisions of some of the companies coming in. You were living with the A-12 decision in the Navy, a fixed price development problem. What is your view of that proposal? Does it have merit in controlling cost or do you only see downsides to it?

A: I think it's possible the proposal could have some merits in controlling cost, but I think it's more likely that it will have the opposite effect and will not help us deal with cost. As you know, the Statement of Administration Policy makes clear that the President thinks that provision is not appropriate this time because we're working to take programs forward with better technology maturity. That is, I have a source document that lays out my goals for the organization and I had a chance to talk a little bit about the fact that we are going to start assessing technology readiness levels as early as possible and make sure we do exactly what the Statement of Administration Policy, fortunately for me, outlines. So, we need to work it from that point of view and we need to work it from the point of view of getting requirements in the right bin. But even when you do all that well, there's risk in the program.

My experience particularly on the acquisition side but also as the overseer of development programs is if you force industry to a fixed price development program they will, as I heard over and over in the Navy and I hear in OSD, they will price in that risk. So you will see prices I think across the board go up significantly because companies will not want to take the chance that they will lose money, so they will price in that risk. I think that has the potential to be harmful for the enterprise. So depending on how well they are able to predict that and the government is able to agree with them on that, there will be cases where that risk is still underestimated and you will exceed the price of the fixed priced contract and they will lose money. But that won't have to happen very many times until they will, and I think going in, they will have the attitude that they will price in every piece of risk and they will frankly have the chance where they will under-run and make substantial money.

Neither situation is perfect. That's why the department after many years has evolved to in places where there's significant development risk, integration risk, and software risks you enter into a cost plus arrangement with incentive fees or award fees and the government accepts some of the risks which is what is concerning people right now, appropriately so. In many cases some of those risks have been recognized and costs have been exceeded, and that's really bad.

In my time in the Navy and my time in DOD, my goal is for us to do a better job on the front end on a couple of pieces. I always say to the team the outcome of the contract's known the day you sign it, the only question is whether we know it or not. We need to do a better job of

understanding the risks, the requirements, the technology, and the technology maturity. Then we need to go aggressively in those contracts which is what I definitely ask to be done in the Navy and again have asked OSD be done with incentives. Know the critical path through your program and put the incentives, the taxpayers' dollars, on the right events that you want to incentivise and when companies make those events pay them their profit and that should hopefully lead us all to get to the finish line together.

So I think we need to use much more effectively the tool that's in the program manager's tool box which is profit and incentive fees, but I think there will be rare instances where the requirements and risks, that whole package of factors, is suitable for fixed price contracts. I wouldn't say you should never use that tool, but the program manager and the Department of Defense have to make that choice.

Q: How much is the specter of the A-12 and the memory of that financial impact, does that still cover the department's view on fixed priced development contracts?

A: I think there are still some people in the department that lived through that so I think it probably does. I don't think it's the right lesson. I'm not sure it's a reasonable message.

I always think about the fact that A-12 and F-22 were in comparable amounts period of time to some degree. The belief or going in position was that A-12 would be developed for something like four or five billion dollars, firm fixed price. F-22 wasn't developed for four or five billion dollars firm fixed price. You've got to know going in what's the reality. The day that--oh, I don't want to go there. [Laughter].

Q: We'll bring John Lehman in next time.

A: Yeah, other people lived through that. I tried to settle it. I did settle it. I just didn't get the department to take the settlement.

Q: DOD came out with UAV, UAS road map sometime ago trying to direct and encourage the development of unmanned aerial systems. Congress seemed to be [inaudible]. Now they're expressing concern about excessive development. Overlap and redundancy. In your area do you have any concern about, is there redundancy in UAV development programs? Should they be more closely controlled?

A: As a guy that's always worried about taxpayer value, I'm never willing to say that it's not something we should look at. But I don't think I have excessive worries in that space.

The best example that could be given to you is what's going on in Iraq. I think the demand signal is such that if there were UAVs that they had confidence in they would take them right away. And I've seen that in other theaters.

I was visiting some of the COCOMs recently and in Southern Command, likewise, they would love to have some UAVs with sensors or manned aircraft with sensors. So the demand for intelligence surveillance reconnaissance is very high. UAVs have proven very effective as affordable ways to get those tools out there. You would have to balance turning the dial back and saying let's narrow down and nick down the type model series against the positive benefits of culture change, learning, and a number of things going on out there. I don't think we're too far out of bounds.

As things move in procurement, you'll have to make good choices and I know the Army in particular, I'm sure you all are well aware of more than I may be, is taking a hard look at making sure they have the right mix for the future modular force. I think that's a healthy discussion.

Q: I wanted to ask you about research and development spending. Some of the forecasts that I've seen indicate a down trend for size and technology except for 6-4 which seems to be pretty high. What do you see as the implications of that? How do you expect to do things with less money in the future, assuming that Congress is not going to put back the money like they have in the past? What kinds of things do you expect will be traded off maybe?

A: I was going to grab a note so I can be sure I'm factually right. The '07 budget that's on the Hill right now is really a very good budget for science and technology. It's \$11.1 billion dollars, three percent, higher than the FY06 request. I have some charts here. It's actually near a historical high in terms of S&T spending in constant dollars.

Q: Not the actual appropriated?

A: The requests. The appropriation, to keep getting the facts on the table in '06, the President's request in '06 was \$10.5. The appropriation was 13.2 billion dollars. Most of that additional money, as you know, came as very specific projects. Some of that is not perfect for the enterprise.

One, a lot of good ideas compete very hard in our process, probably harder than they ought to have to, to get into that \$11 billion so that we can deliver something that people thought about a lot and get it to the warfighter. That additional \$3 billion when it comes, not necessarily against some of those gaps or requirements holes that we have, and it comes directed for specific companies and doesn't take advantage of what's made America great like competition, may or may not be maximum added value. But people work hard and do good things with the money.

I think it's very important to focus on the core. The core's up and we'll see what the '08 budget deliberations, but the current FYDP has the core funding pretty stable with some slight increases. No question, just like all of you we see the budget environment and the pressures that are swirling. But it would be my intent to try in that business space to push, not just because of the

obligations of DDR&E, but because there is some rightness to it. I think you've seen and heard in the past and there's some truth that some of the money in the 6-1 to 6-4 program has tended to migrate towards 6-3, 6-4, and particularly 6-5. People want to get to 6-5. I think there is some legitimacy to the concern that we've taken some programs into 6-5 or system design and development with not enough technology maturity.

That argument alone combined with that view being shared by some of the leadership and reflected in the Statement of Administration Policy will hopefully keep S&T funding stable and within that we need to make sure that funding is devoted to exactly what I talked about earlier, maturing the technologies that we're going to take into SDD, doing more prototyping both to reduce the risks and doing prototyping so the warfighter can get a better sense of what a system can do for them so we can make a better decision. There may be some things that get prototyped and don't go to SDD, but there are some great side benefits from my point of view to that.

We may never get back to the days that Dave and others of you remember, the æ60s where we had lots of X planes out there. But it certainly would be healthy for the nation to get a couple of steps back towards that direction and have more prototypes so we work up greater technology maturity and less risk into the programs in the future.

Equally important, those are the kinds of things I think attract young people to become scientists and engineers and attract those scientists and engineers to come work on DOD's problems. That's important.

The President mentioned this in the State of the Union, that he's concerned that the nation develop a science and engineering workforce that's going to carry us 20 and 40 years into the future. I think DOD doesn't have a dominant role in that but has a small role to play in helping encourage people to get those technical backgrounds and give them opportunities to work on good things.

Further, when you give people a chance to work on prototypes they develop those systems engineering skills and those experience skills that let them be effective on those SDD programs, especially in a time where as you've heard our workforce is aging and some of the experience in our workforce is going to retire. We've got to get younger people hands-on experience building something so they can be part of designing, building, and manufacturing something in the next stage.

Q: You were saying the Congressional earmarks are not really helpful to you.

A: I didn't say that. I said they are helpful in many cases. We work hard to do that. In a lot of cases though they are directed for a very specific project and frequently for a very specific company and that doesn't for sure take full advantage of what's made America great which is competition.

Q: So what gaps do you have that you think they should direct the funding [inaudible] instead of these earmarks? When you mentioned earlier that there were some gaps [inaudible]?

A: You know the department, in it's planning for æ08 and is going to work hard on some of those gaps. I think there's a good bit more to be done in the biometrics area. We've put some technology money in it and I talked for a minute about the tools we've deployed.

Many of the gap spaces I think are being addressed but may need more work. They largely deal with, one of the other questions was the global war on terrorism. Can we do more on tagging, tracking, and locating? The things you saw in the QDR, detection of weapons of mass destruction, sensing technologies including taking full advantage of hyperspectral sensing technologies. There are a range of topics and technologies that I think are very powerful in global war on terrorism. We're going to look hard at making sure there's investment or making investment shifts there to make sure the department has as good a balance as possible in those programs, and to help in those spaces as well.

Q: You were talking about getting technologies out to the warfighters faster. There's an urgent needs requirement out there for an active protection system for vehicles that came out of Iraq. Yet the Army seems pretty wedded to the system they've chosen for FCS. Do you see the department needs to get involved and perhaps throw some money after some other options or perhaps look at what else might be out there?

A: When you say active--

Q: Active protection system.

A: Oh, for incoming rounds and those things. I probably should do a little more homework, but one of those quick reaction things I didn't mention was some quick reaction funds because of these needs particularly against the EFP, explosively formed projectiles. They developed what's essentially an air bag system that can go off in enough time to alter the fusing and defeat the EFP. So the Army's looking at that technology. Whether or not that will come into FCS or not, I don't know.

The technology space is producing ideas that can be contemplated along--Like the dates, you have to say well this is where I'm going for now, potentially be willing to change if the technology offers you a new option, and then I'll try to stay consistent with what I said, that technology needs to be affordable, mature, and some of those other factors.

I think because of how severe this problem is we're losing lives everyday. I don't think there's anything more worrisome to Secretary Rumsfeld and Secretary England than what's happening with IEDs and the danger to vehicles.

I was in a session yesterday where Secretary England specifically asked, this is kind of a new start program, NACTD, the joint light weight tactical vehicle which has the potential to become the Humvee replacement, intense focus in the department. Okay, what levels of protection are we going to try to design that vehicle to have? There are a lot of technology opportunities that are going to have to be sorted through before you make those final decisions.

I would argue across the board just as I did with the small companies. People have to make sure they come to the table with an open mind. We do have a problem in some pockets where people haven't been willing to look at technologies because they religiously follow the program of record. And that's a role for OSD to step in and say you have to take a look. We've done that in a couple of places.

Q: The Senate put some language in the æ07 authorization requesting you look at other systems that are out there. I was wondering if you--

A: I think we'll do that through the technology program, but they'll have to prove their viability. One of those challenges, it's a little like that three billion dollars. The great thing the Department of Defense Research and Engineering team does is sort the wheat from the chaff. People come and promise, rightfully so, with either optimism or paper design that they can do a lot of stuff. We've done a great job.

One of the other great things that have been done with some of the quick reaction money is set up this joint experimentation center at Yuma. They call it the JERC. It's used almost 24x7. It is the gold standard proving ground for things going to Iraq or Afghanistan. We've put a lot of people that have made promises to the Pentagon or to the Congress through their paces out at Yuma and some people succeed and some people don't.

Q: But are you confident in the system that Raytheon has chosen is the best?

A: I'm not prepared to say that. I'm also not close enough to it. I haven't looked at it currently.

Q: Do you think we're approaching kind of [inaudible] paradox with some of these really big contracts where we consistently make progress, we consistently make these short term milestones, but we never really get that much closer to reaching the end products? With the Future Combat Systems, missile defense, and the satellite programs, if you look at the six month milestones they're being met, but if you look at the timeline it's like we're always half the distance to the goal but we're never really there.

A: I think that's a hard question to answer. I'll be brief so you may have another chance. Some of those are getting out of my lane. The ones that are in my lane and like I had a discussion the other day on the TCEP program, the [inaudible] Four program. The criticality and I think the

marching orders I have and the department has from the leadership is not let some of the things you're talking about happen. Those are hard discussions. But in some of those discussions the requirements need to be pushed back to the realizable level, the risks need to be pushed down, and then we need to be able to go tell the Congress and the warfighter that we have pretty good confidence that for this amount of money and this amount of time you're going to get a product with this level of capability.

I think in some places you're right. The bars have been put too high. People usually eventually get across that hurdle but it's usually stretched out in time and money.

The thing the system can't measure very well is the lost opportunity cost. When you have to go put more money in a program you thought you were going to buy for X and now it becomes X plus Y, that's painful to the enterprise. There's a real unseen pain where those Y dollars now don't get to buy you IED technologies or biometrics technologies or tagging, tracking, locating technologies.

So I think the pressure is well placed and probably needs to continue to increase on do what you promise you're going to do within the budget and time you allotted.

Q: Do you think there really is a problem with a disconnect between the short term and long term goals? I'll use FCS as the example, even though I know that's not one of your [inaudible].

There was a great comment in one of the GAO reports where they said the Army is going to get into a situation where it can't say the program isn't doing very well because of all these very specific short term goals they've set for themselves even though the end product may be just as out of reach as ever. More broadly, do you see that as a problem for the department?

A: I can't say I do. It's a challenge in some areas but not to the same degree as FCS. FCS is kind of unique because the Army fights as a combined arms team. FCS reflects that. It's kind of got the full spectrum of the Army's tools from armor to light vehicles to UAVs to the network.

So what you say is true and may be uniquely true in FCS because they can spin out, which is their strategy, certain technologies that are helpful to today's force. And that's what they're doing. I think they still, as you all know, face challenges in getting to the finish line. So you've rightly said it, but FCS is one of the more unique programs. But increasingly it is getting on the department's screen, and I think it will get more on the screen as we go to portfolio management. Even in the near term, this systems of systems.

Go back to the example I used, integrated air and missile defense. You have AEGIS, you have AWACS, you have Patriot, and hopefully going to have this very powerful SM6 missile. What's the right amount of integration having them work together? It is a systems of systems problem. You could move some of the requirements to the missile or the sensor or to the combat system.

And those trades need to be looked at in a bigger context. I think the department's recognizing that and recognizing that with the need to go to some portfolio management techniques. But FCS I think is still going to be a little bit unique.

Q: Sir, I think there's a recognition in the department that energy security, and fossil fuel dependence is a serious problem. What was your office doing to study this?

A: I appreciate the question and I'm very interested in this. I guarantee the leadership, well, you know, the leadership from the President, Secretary Rumsfeld, and Secretary England is keen on this.

Back in the December timeframe, I drafted some language that was somewhat motivated by some experience in the Navy on looking at energy efficiency, alternative fuels, and then energy devices. That language is in the SPG, the strategic planning guidance, and asks that DDR&E work with the Joint Staff to lead a task force. The working elements of the task force have done a lot of work to table what the department's doing in this space, where are the gaps, what could we do more of, or what could we do to fill the gaps. Then the executive group of that task force met about a month ago and looked at all those recommendations and urged that we keep pushing on several of those forward. The SPG puts us on the hook to provide a product to the defense, the acquisition working group. I'm sorry. Can I get back to you on what that acronym is? But it's the DAWG. It's a group shared by Secretary England and Admiral Giambastiani. It's the deputy's advisory working group. So we're going to report back in.

My goal is that task force would lay a package of things on the table that the department can do acknowledging what we're already doing. It would be in kind of those spaces of what do we want to do.

The Air Force has already taken some steps to look at alternative fuels and alternative fuel production processes. There was an initiative that was already on-going in DDR&E on energy and power primarily focused on more efficient power generation, more efficient batteries, and more efficient use of energy. Then I think there will be some new efforts although some of them are already under way in like that ACTD on the joint light weight tactical vehicle. What can we do on our vehicles to make them lighter, more efficient engines so we burn less fuel or energy when we do it? So it's a broad front initiative.

I'll give you one example of it. One thing we're already pushing forward on that I think the leadership is pretty supportive of is we look at some of our acquisition programs and price the life cycle cost considering the cost of fuel at the pump if you will. We need to do that for the delivered price of the fuel. Because as you know, for planes, and vehicles in theater the delivered price of fuel is significantly more than at the pump. That might lead us to make some different decisions about a willingness to invest money to get more efficiency in the engine or a lighter vehicle that will burn less fuel as opposed to the amount of impetus for efficiency that's in the

system now when you unrealistically look at the life cycle cost as the fuel price at the pump.

Q: Just to follow really quickly, you said in the beginning that there are some people with good ideas who have don't know how to get into the defense department. There are also a lot of people who have some really bad, wacky ideas, and energy is one of those areas. What do you do to keep the cold fusionists, the zero point energy people from coming back because this happens especially when you throw money at a problem, keep these people from coming out of the woodwork and saying m perpetual motion machine is going to solve all of this?

A: I'm very happy with this task force and the team. You hear this often and it's true. You have to be smart buyers and we have some people in the Pentagon that are extremely knowledgeable.

Unbeknownst to people, the department has actually, at China Lake they capture thermal energy and reuse it. There are some wind farms in the department for remote bases. So the department has some very knowledgeable buyers in this space and they're part of the team. I think they will sort the wheat from the chaff.

I don't go into this assuming it's throw money at the problem. I think we will table some good ideas and they will have to compete with all the rest of the ideas. I believe there's a fair chance some of the ideas will compete well because of the need for the department to have as much self-sufficiency and lower it's fuel costs.

You know one of the issues in the æ08 budget will be dealing with the price of oil and what that means to the cost of fuel and the flying hour program. There's more than enough motivation for the department to make some smart decisions in this space, and Secretary Rumsfeld and Secretary England are keen to do that.

Q: What's happening in the area of nano technologies and how do you see nano technologies basically changing the face of warfighting in the future?

A: I think there's enough there that I couldn't possibly--I don't know everything and I can't tell you everything. I think it's an extraordinarily promising area. I've asked the team to take a hard look. There are some companies using nano particles and nano wires working with intel to create the next generation of chips that may improve the yield and have more fault tolerance. I've asked them to take a look at that space as to whether some of those kinds of technologies can help us with that next generation step where we need to take on radiation hard and radiation tolerant devices. I think those concepts will likely be part of steps we take to produce new tactical vehicles that are lighter in weight and therefore more fuel efficient and offer the blast and fragmentation resistance to give our soldiers better protection from IEDs, RPGs, and mortars. It's kind of an explosive space including, I'm sure you've heard of the use of nano technology to make very tiny inertial measurement units which give you the chance to be tolerant of the idea that GPS goes down for periods of time so the vehicle on it's own keeps track of it's position. In a

blue force tracking and situation awareness you still have to know where everybody is. Particularly in chem-bio space, some nano technologies have proven extremely powerful in remote or on-sight sensing and detection of chemical weapons. It's also potentially useful as filtering techniques to filter logistic fuels like JPA to get them to be very clean fuels that you can then put in a fuel cell because fuel cells aren't tolerant of fuel impurities. I just touched a few spaces where nano technologies are pretty powerful.

Q: You were talking about some of these projects that are still years away from completion. Can you talk about what technology you have for the warfighter right now and when can they expect to get it?

A: Can I cheat and look? I brought a list of some things that I thought were worth at least mentioning to you. Some of these have come out of the counterterrorism task force or ACTDs or DARPA, and so I'll just give you a list of things and see if any of them scratch or are what you want. As much as anything, I'd like to make sure you understand that there are situations where in more like months or a year and some change things are getting in the hands of warfighters because to respond to urgent needs or take technology that people now see a chance to apply to a problem and do it.

There's a persistent threat detection system that's an aerostat with cameras. It works in conjunction with acoustic radar and infrared sensors that are placed. are in a region. What that combination or sensor does is if you have a blast or a shot, the camera can immediately get cued by those sensors, given it's on the aerostat and has a large field of regard, tell you where that happened and vector response forces to that area. Particularly if it's people firing mortars, you can shut that down.

I mentioned the biometrics tool which is just powerful, and I think there's going to be more utility of that. It's already used heavily in the Homeland Security in the private sector. I think that's going to become a tool the Defense Department leverages and works with Homeland Security and other people to take full advantage of.

There's a tool that's potentially going into the theater in July called Constant Hawk. It's what they describe as persistent optical imagery. It's constantly watching and recording and keeping that picture. With that, again when you have a blast, event, or something you can go back and kind of do the Tivo thing if you will. Rewind and look and see what vehicle traffic or people were in and around that area and use that as clues as to people that you need to go have a talk with because they're doing bad things.

DARPA has been very successful in putting some language translation tools out there. One of the latest ones that's in use with 1 MEP is global autonomist language exploitation or GALE. All of these as you guys know have acronyms of some sort. The bottom line is the tool will look at broadcasting Arabic and deliver an English translation. You can give it certain key words to

search for and it will make sure you see those snippets or those particular stories in Arabic and it will translate on the spot without the need for translators.

There's another tool that's being used in training that's come out of DARPA, it's a tactical ground reporting network. It's a tool that puts down at the dismounted level, the soldier walking around the streets, a database where he can take pictures, make observations, collect video, and store it. So then the next guy, the next day, who's walking that patrol can look back through all that and see places where there is danger and in advance raise his own level of caution or collect more information and make it part of an intelligence kind of forensics database that says I keep seeing signals here and we're going to have to take some action in this space. Right now it's being used as a training tool for guys as they prepare to go into Iraq. It's had some very powerful results. The soldiers really like it.

Q: What's that called? Tactical ground reporting network?

A: Tactical ground reporting network. The acronym is TIGR NET.

In one of the quick reaction programs, they're working on a coating that would let you avoid grease. Obviously, for the guns and weapons in Iraq and Afghanistan and the sandy environment cleaning and wear is a constant problem. This coating is a dry coating which would let you avoid grease but still provide the lubrication so the guns don't wear. It would also avoid the issue of dust and dust fouling and the grease collecting the dust. It's a simple effort but a very powerful effort that helps quality of life and the burden on the soldiers.

Another one was the fifty cal guns on M1A1 tanks did not have a sight. They were just kind of crew served if you will. Quickly developed within the program was a thermal sight and that's going to production this month to buy thermal sights for the Marine Corps tanks. The Army's also partnering in this and has an option to buy systems for their tanks.

I could give you a number more but there's some really exciting things between the counterterrorism task force, DARPA, quick reaction, and ACTDs that are going forward.

One of my initiatives that I'm pushing is some of things come to fruition quickly and then they've missed a POM cycle. I think one of the fundamental jobs for DDR&E is transition. In fact, a couple of months ago I sent a handful of transition letters to the services and said these projects, most of them were ACTDs, are nearing completion, the results look very good, and we definitely need in the æ08 budgeting process to lay in the money that will take these and turn them into deployed capabilities.

Transition I think requires constant vigilance on the part of myself and my team to get things in the budget. This valley of death largely exists because of our budget processes where if you finish a great project today but there's no money in the æ07 budget you're looking at waiting at

least a year and half to two years just to get in the æ08 budget. Our own budget process is the biggest impediment to technology transition.

Q: Can you say when these Marines will be getting this thermal sight and who's going to be getting the cameras you're talking about that can spot where the mortar--

A: The production contract for the thermal sights is to be awarded this month.

Q: Can you estimate when you'll start seeing these--

A: Can we get back to you on that? I'd rather not guess. I don't think these are long lead time production devices. The other questions you asked, I'm specifically not answering where some of the cameras and observing systems are being deployed in theater.

Q: Can you say when?

A: Some of them are in theater now. This PTDS I mentioned is in theater now. The Constant Hawk, where you can back track through the imagery, is being deployed in July of this year.

Q: I wonder if I could wrap up with one quick question back on long range strike. If you look at the history of bomber development over forty, fifty years, you see a lot of it may have been bureaucratic institutional momentum but also bombers responded to some perceived problems. The B-70 was high flying because they thought that was the best way to deal with the Soviet threat. Then SAMS came in so they got the B-1 to go low. Then the integrated air defense system became so thick that stealth, the B-2, came in. So now we're looking at a new bomber. What's the perceived problem that this bomber is supposed to overcome?

A: I think you have to ask the requirements guys, right?

Q: It was the QDR that said it was an urgent need to get this thing out. So what's the problem?

A: There are a couple of things I want to say to you and I want to say it in the right order. It's clear that the age of the B-52 force is at least one concern for people. The numbers in the B-2 force, there's a small number in that fleet and a somewhat small number in the B-1 fleet. In time in all of our aircraft programs we make some assumptions about attrition. Actually I think we would all hope there would be no attrition in the B-2 force, but you can't guarantee those things.

I think the QDR team, and I wasn't part of those deliberations so I really don't want to answer the question other than giving you knowledge from where I sit and that is we have in some areas an older force and we have a certain set of capability.

I'm keenly interested in kind of what you're talking about. What are the requirements set that

we're going to finalize and agree drive that aside from the potential age and how much robustness we want the bomber force? Some of the legacy of this is JUCAS. In that program the Air Force was asking that this have a great deal of SEAD, suppression of enemy air defenses, and DEAD, destruction of enemy air defenses capability where as the Navy was more interested in persistent ISR and JUCAS. So I'm interested in how much of that JUCAS requirement the Air Force will bring into long range strike and if that platform will do some of that.

I think the date is driven by some aspect of we need to get on with the program and define the issues. I don't believe the date has to be totally carved into stone, but it needs to create enough urgency for us to understand the technological challenges and what we can deliver with a consciousness of the age of the asset. That keen space that you're going to be watching and I'm going to be watching is how many requirements are we going to bring in because that's going to decide whether that date can stay there or not, for one.

Q: Okay. Well, we're out of time. I appreciate you coming in.

END TEXT

