DoD News Briefing

SUBJECT: THAAD Flight (Intercept)

Briefers:

Richard Davis, Brigadier General, USAF
Deputy for Theater Air and Missile Defense
for the Ballistic Missile Defense Organization (BMDO)

and

Joseph Yakovac, Brigadier General, USA
Deputy for Systems Management and Horizontal Technology Integration
for the Assistant Secretary of the Army for Acquisition, Logistics and Technology

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COL Bridges: Good afternoon, ladies and gentlemen. It's not often that we get to talk about two major successes today, but this is the second, the THAAD success from this morning. I have for your afternoon briefing, I have Air Force Brigadier General Richard Davis, who is the Deputy for Theater Air and Missile Defense for the Ballistic Missile Defense Organization, as well as Army Brigadier General Joseph Yakovac, Deputy for Systems Management and Horizontal Technology Integration for the Assistant Secretary of the Army for Acquisition, Logistics and Technology.

General Davis has an opening statement regarding the test and the role of the THAAD in the Ballistic Missile Defense Program. He will be followed by General Yakovac, who will address the objectives and conduct of the test, as well as the test scenario. And then, following General Yakovac's presentation, there will be a video presentation. And then, after that, you'll have a chance to ask your questions.

General Davis.

General Davis: Thank you.

I'm very happy to announce that the Theater High Altitude Area Defense System, which we call THAAD, flight test number 10, was conducted successfully this morning at White Sands Missile Range, New Mexico. The primary objective of the test was a body-to-body intercept of a theater ballistic missile target in high endoatmospheric regime, roughly between 60 to 100 kilometers. This objective was achieved.

The intercept took place at approximately 0719 Eastern Daylight Time. Indications are that the hit of a Scud-like target was in the warhead region, as intended. The target was destroyed. And later on the video you'll see the impact and spectacular explosion that took place.

The end game data collected on this mission will be of value to all the Ballistic Missile Defense Organization's programs. It is a regime that we have not had an intercept before. The next flight test is tentatively scheduled for THAAD in early July 1999.

With the successfully Patriot PAC-3 intercept in March of '99, the United States now has successfully demonstrated hit-to-kill intercepts for a two-tier system. Our family of system concept of multi-platform, multi-tier defense will eventually include the Navy Area for the Lower Tier, the Navy Theater-Wide for Upper Tier and the Airborne Laser for boost phase, as well as Patriot for our Lower Tier, and the THAAD program for our Upper Tier.

For the THAAD program, this was the seventh intercept attempt, our 10th flight test. Three more flight tests using these prototype missiles are currently scheduled. The THAAD program is scheduled to enter engineering and manufacture and development, or what we call EMD, when a total of three successful intercepts are achieved. EMD is the phase to prepare for full-scale production and fielding for the soldiers.

The THAAD system will provide the Upper Tier for the family of systems two-tier theater missile defense concept. The high altitude and theater-wide protection offered by THAAD will provide more protection of larger theater areas than the Lower Tier systems alone. THAAD is being designed to defend against both medium- and longer-range tactical ballistic missiles. THAAD is a completely integrated weapon system, consisting of radars, battle management, command, control, communications, intelligence, launchers, and missiles. All of these various segments performed as expected as an integrated system in this morning's successful intercept.

The THAAD program is managed and funded by the Ballistic Missile Defense Organization, and executed by the Army Program Executive Office for Air and Missile Defense, in the Army THAAD Project Office in Huntsville, Alabama. Lockheed Martin Missiles and Space is the prime contractor, and Raytheon builds the THAAD radar. The Army Space and Missile Defense Command in Huntsville, Alabama, manages the target used for this test, and Coleman Research Corporation/Aerotherm Corporation are the contractors for the Hera target.

I would like to refer to the charts for a moment to talk about why THAAD is so important. The requirement is the Upper Tier to defend against those medium- and longer-range tactical ballistic missiles. It provides a much wider area to provide size of counties as opposed to critical asset defense. It provides a single-shot kill probability, to prevent leakage. We can have a shoot-look because of the large ranges that we go after. And it provides a capability against the entire threat regime that we expect to be encountering in the theater environment. And specifically, it allows us to go both exoatmospheric as well as endoatmospheric.

We're obviously concerned because of the growing theater missile defense threat. Twenty-five countries currently have theater ballistic missiles today. Also, this is designed to go after weapons of mass destruction by using the hit-to-kill warhead. We are basically concerned about the high-velocity theater ballistic missiles. That is what THAAD was specifically designed for.

And it consists of the, if we come over here, the THAAD system description, when we talk about that total system, we're not only talking about the missile, which is a hit-to-kill missile, we're talking about the radar, the battle management command and control system, the launcher system, as well as the battle management that goes with the launcher command and control system. These were all actively exercised today, and worked as an integrated unit.

At this point, I would like to introduce our specific test that was conducted. Joe, if you'd like to come forward.

General Yakovac: My role is to describe the test and then take you up to the point where we will show the videotape.

To my left is what we had set up today and the mission objectives as stated, to demonstrate body-to-body, high endoatmospheric intercept of a unitary target, demonstrate and characterize the seeker performance, and then demonstrate the THAAD system in a closed loop. All of the components were there.

Now, there are a lot of things on this chart. A lot of the items are for the purposes of monitoring the test. I call your attention to the launcher, the ground systems, the radar, the battle management, C3I, and then the target. Distance between target and launcher: approximately 170 kilometers. The target is launched. It reaches an apogee of roughly 314 kilometers, about 5 and a half minutes into flight. It then turns over and starts its descent. During that time, somewhere in that sequence, the THAAD is launched. It goes into its deployment. And it's really flying with its eyes closed. It gets close enough and its eyes open and the seeker takes over.

At that point in time, you will see in the film that we have an intercept. Then at that point in time, the target is approximately flying at 2 kilometers per second and the THAAD is supersonic. And again, that takes place between 60 and 100 kilometers.

Now, I'll turn your attention to what actually happened today, and then it will be amplified in the movie, in the short videotape. The Hera launch, as I stated, it's up 5 and a half minutes into the flight. It goes over. The sequence you'll see then is the THAAD being launched. And as it gets close, its eyes are opened here and it begins to acquire the warhead.

Now, what you will see at the end of the videotape very dramatically is what the seeker was looking at. This is the thermo-imagery of what that seeker was able to see. The end game, and then the result of what happened in terms of destroying the target, and the debris that is left.

So we will now take you through to the tape, and show you that exact sequence.

[Whereupon, a videotape was shown.]

General Yakovac: Again, to reiterate, the Hera target represents a representative Scud-like target.

[Videotape continues.]

General Yakovac: That comment was, why the spiral? That's the Energy Management System, the THAAD Energy Management System that is employed, based on where they expect the target, at what altitude they expect to intercept the target.

[Videotape continues.]

General Yakovac: The THAAD, the target, you will see some final -- an initial adjustment being made as it is now homing in. The hit. And the debris.

[Videotape continues.]

General Yakovac: Sixty to 100 kilometers.

[Videotape continues.]

General Yakovac: Now what you're going to see is if you were riding on the seeker, you are coming -- this is what the seeker saw as it went into the end game.

[Videotape continues.]

General Yakovac: Can I have the lights, please?

That concludes the formal part of the presentation, and we'll now be available to answer questions you may have.

Yes.

Q: You mentioned the Energy Management System with the spiral at the beginning. You said it goes on, judging on what height you expect the intercept to be. Can you describe why it has to spiral like that?

General Davis: Well, we have test range limitations at White Sands Missile Range. And part of that is when we go after an intercept in the endoatmospheric regime, you would like to keep the velocities of the interceptor in a regime that allows you to have the booster drop off earlier. And so the TEMS, the THAAD Energy Management System, is a mechanism to bleed off a lot of the energy early on, so that then the velocity is at an acceptable range for the intercept.

So it's partially because of the limitations of the test range that we're using at White Sands. But in a low-intercept environment, it could also be used tactically, as well. To me, it's an unnatural act. But if you ever watched a missile being launched, to see that, sort of your heart goes up in your throat. But it is planned. And it's been used in all of the test programs thus far.

Yes.

Q: You say you after have three successful attempts you're going into a production phase?

General Davis: Yes. I should point out, this is a major milestone, because this is the first successful intercept, but we still have a ways to go. This was in the high endoatmospheric regime. Our next test will be actually exoatmospheric, above 100 kilometers. That's part of the regime we have to make sure we can operate as well. And then the third test we have scheduled will be in the mid-endoatmospheric regime, basically in the 50- to 60-kilometer regime.

As we're doing all of our ballistic missile intercepts, we're trying to plot out all the regimes which have different fundamentals associated with them, to make sure that we can accomplish this. That's why we say that this test was important for all of our

programs because it gives us a database that we hadn't had before, in terms of the seeker and in terms of the type of phenomena that occurs at that particular altitude.

Q: You said the next test is scheduled for early July?

General Davis: That's correct.

Q: When is the one after it scheduled?

General Davis: We're looking at the September time period, September-October time period, for that test. Obviously contingent upon what we learn from this test and what we learn from the other test. But, currently, our acquisition program requires us to have three successful intercepts before we go into that engineering/manufacturing phase of the program.

General Yakovac: I think it's important. Your question at the end was production. We are not going into production. We're going into engineering manufacturing and development after this.

General Davis: That's correct.

Q: [Off microphone] those three -- another two tests?

General Davis: After we have the third successful intercept, we will then go directly into the EMD phase.

Yes.

Q: You mentioned that the THAAD interceptor hit the Hera warhead. Can you comment a little more specifically on the quality of that hit? Did it hit the warhead on its sweet spot? Do you know at this point if it hit it at that point?

General Davis: At this point, we have photosensors that indicated we hit in the primary area of interest. And we would have had a lethal kill, based on that. The test occurred this morning. To get the type of data you're seeing right here, to include that thermal sensor, is, to me, phenomenal. We will have much more information in the following weeks, and be able to comment on that. But all the indications are -- and as you saw the interceptor approaching that, it was aiming exactly for the right spot. The sensors we had on the target indicated that it would have been a lethal intercept, destroying the warhead in this particular case.

Q: General, can you talk a little bit about Lockheed's performance here? They've taken it on the chops both financially and reputation-wise because of the seven prior -- or six prior failures. Can you talk a little bit about how they improved, and some of the financial wickets they need to go through so they don't lose any more money on this program?

General Davis: Sure.

Q: Or performance wickets.

General Davis: As you know, there had been a problem with respect to the quality of the hardware. We have expressed that in the past. What I have seen is they have changed some of the management and put what I would call the first team in. I've been very impressed by the team that they put together, headed by a fellow named Ed Squires. As a program manager, I think he's turned the program around. He has looked and analyzed not only the black boxes, but inside the black boxes. And I have never seen such a thorough review prior to a test as what we've seen in this particular case.

What we've seen in this whole arena is that they have matured. They've learned from their past activities. We're still not out of the woods. As I said, there are still two key intercepts that have to occur. But I think this demonstrates that even with some of the components that were left over, they have put together a first-rate team that is geared towards success.

Q: Now, they were docked $15 million for the last of the six missiles. Is there any way they can recoup that if they hit three in a row?

General Davis: Currently the exit criteria that has been put in place in terms of the contract is that they had a miss on test flight number 9. That was a $15 million penalty. They have to have two intercepts by July 16th or look at another $20 million decrement. And then, if they do not have three intercepts by the October time period -- and the reason why I don't give the specific date is because we had the test failure with our government-furnished target last night, and that shifted things on a day-for-day basis, but then there's an additional $20 million if we don't have three successful intercepts by that time period.

I think the important message here, though, is we really want success. The whole idea is not to penalize the contractor, but to have a teaming relationship that we all get a win-win situation, and have a capability delivered to the country. And that's what we're focusing on in this case.

But after we go through the whole test series, if in fact they get through this year, demonstrate that we have a successful program that can go into the EMD phase, there is a chance to get back some of that money based on where they are at the end of that program.

Q: Is the second test going to be more difficult because you're flying higher, you're aiming for a higher target?

General Davis: I think it really -- each area of intercept has its own pluses and minuses. In the exoatmospheric, you don't have any atmosphere, so you don't have the heating problem with the mirror -- with the window. But you also then have systems coming in that might have -- the atmosphere tends to take any countermeasures or, in this case, if you have small debris, it would filter out the debris. In the exoatmospheric, when you have a vacuum, that filtering doesn't occur. So that has its own unique area. It's a little colder out there, which should make things easier.

As you go lower in the atmosphere, you get more filtering, but then you get some atmospheric effects, jet stream interactions that might affect things, as well. So

that's why it's so important to map out the entire regime, because there's different physics occurring in each part of those.

Q: Can I ask one final schedule question? What's the current schedule right now for the first unit equipped if this thing does walk through the acquisition process fairly smoothly from here on out?

General Davis: Depending on congressional funding, which is always an issue in this case, we have designed a program that is being baselined to have the first unit equipped in 2007.

Q: And how does that differ from the original milestone?

General Davis: It depends on what you talk about in terms of what the original was.

Q: Well, I know, but --

General Davis: And so it depends on -- I would have to -- a year and a half ago, we were talking 2005. Then, at one point, we were talking 2009, based on the budget. So it's been moving around a little bit. 2007 is actually an acceleration somewhat of where we were in December, as we're trying to get things filtered, based on the threat that we're seeing coming in with the No Dong, the Taepo Dong, and some of the longer-range systems that we might be exposed to.

But, right now, we're focusing on a 2007 time period. And that's obviously a function of what money we get from Congress this year. We did lose about $300 million in our budget from Congress last year. That has had an effect on our schedule.

Q: Have the CINC's talked -- I mean just in terms of the first unit equipped in 2007 -- it would seem like obviously this is good news and the CINC's might very well want to have something like this out there. Have they come to you at all in terms of accelerating it more than the 2007? And what tradeoffs would obviously BMDO have to make with R&D funding to put towards inventory there.

General Davis: I think it's not an inventory, it's a capability. As I've said, we are not even into the engineering/manufacturing phase at this point. I think it's not appropriate to answer that until we get into a phase that is the engineering phase, because we're still in the preliminary design risk reduction. There are still some issues that we have to come to grips with in terms of the capabilities of the system. I think the fact that we've had an intercept is a major milestone, because it says the technology can work. We've shown it to be able to work. No longer do we say that the design is flawed. It was just a case of where can we get this to work across the entire regime.

Q: And have they come to you at all and --

General Davis: The CINC's are very concerned about getting something deployed right away. Patriot is a very high priority because they want something that will give them a capacity against the threat which is -- right now the threat is in the 400-kilometer, 1,000-kilometer class system. THAAD is going to be a much better capability in terms of responding to longer-range threats and providing an umbrella,

especially for city defenses, as well as for large troop deployments. Because it obviously gives us two tiers. It gives us a much better probability of kill.

If we look at USACOM, they have something called a Capstone requirement document, which requires protection against critical assets. You almost, for some of those very important critical assets, you almost need to have two tiers to get the probability of kill necessary. So there is pressure, but I think what we've learned, if you remember the Welsh report, we want to do things right. We want to have things that are event driven and do the science up front, the way we should. And I think THAAD now is being restructured to focus on getting a capability fielded at the right pace.

Yes.

Q: Sir, could you go back to the warhead for a moment?

General Davis: Sure.

Q: I know at one point you said that THAAD is also to take care of weapons of mass destruction. And in that video, the pieces of debris were fairly large sized. And I was thinking, when you consider weapons of mass destruction and lethality studies, it doesn't look like you want pieces of debris that I can determine on a dark tape to come down on your assets. Are you going to be doing more studies with different kinds of warheads in the future?

General Davis: Let me just correct one thing. The fact that you saw a tremendous explosion doesn't mean there's large size there. That was a thermosensor. Which means there's a lot of hot debris going on. Imagine two trains hitting each other at over 100 kilometers per second -- I'm sorry -- over 100 miles per hour. The amount of energy released in that is tremendous. That's what you have when you have something the size of this desk intercepting -- being intercepted by a THAAD, which is a little bit smaller than that.

Because it's hit-to-kill, the amount of energy is just tremendous. And we expect to be able to not only destroy both munitions, chemical munitions, but submunitions, as well. The same idea as with the Patriot. The reason why we went to hit-to-kill versus a frag warhead is to provide that tremendous mass at high energies that will just decimate and knock out all the submunitions. If there were a nuclear warhead there, it would also be knocked out.

So, again, the concept of the hit-to-kill is to make sure that we are lethal against submunitions, chemical munitions and biological munitions that might come into play.

Q: So you are saying that those large things that looked like they were coming down were the thermal image, and whatever that was might not be a piece of debris coming down?

General Davis: Yes, I would expect -- we'd have to look at the actual debris cloud -- but I would expect that, with that amount of energy, you will not see large clumps. You will see fairly small clusters of stuff. But what you were not seeing was the

physical side that you'd see with your eyes. It was the thermal imagery, which reflected the heat and the energy being dissipated by that particular intercept.

So we'll certainly get back and talk about the size of the debris, but based on what I've seen on some of the Patriot shots, you're going to not see large pieces of metal in that type of intercept.

Q: Have you already determined which THAAD missiles out of the existing inventory of THAAD missiles will be used in flight test 11? And are you already actively making preparations to get that ready for the test? And also, will the Hera target for the next test, will that be a unitary warhead as well?

General Davis: Yes and no, in that flight test 11 is going to be ready in July. Which means it's already almost ready to be fielded. The next flight test is going to be a separating warhead, exoatmospheric. The flight test number 12 will be endoatmospheric, and it will be a unitary warhead. And flight test 12, we're already -- the missiles -- we only have three missiles left. We have that for 11, 12 and 13. That's the remaining hardware that we have available that has been integrated.

We have spare parts that would allow us to do two additional tests if we had to. But that's it. And the whole idea was to get through the risk reduction phase and starting going into the EMD phase, where we can improve the testability, reliability, maintainability and take all the lessons learned and incorporate that into our next series of hardware that we'd be building.

Q: So those three THAAD missiles, you already have them assigned for the next three tests, you're already know which ones are going to be used in which test?

General Davis: Yes. And then, no more hardware from that.

Yes.

Q: General, I'd like to know about the current status of the development of Navy Theater-Wide also, and compared with THAAD, which one is how far ahead of the other?

General Davis: Well, again, a year ago, Navy Theater-Wide was in a demonstration program. Our goal there is to demonstrate that we can do hit-to-kill with what we call the LEAP Interceptor, the Lightweight Exoatmospheric Interceptor. I should remind you, it is designed strictly to operate exoatmospherically. It is designed to be part of the standard missile program. So we're building upon a legacy of standard missiles, to include the SM2 Block 4A, which is the Navy Area Program.

So, it is behind. But, on the other hand, because of the legacy of the standard missile program, we are looking at an intercept which we call flight test 3, in the mid-2000 time period. We'll have some characterization flights going on. And we will understand, by the 2001 time period, what its capabilities are in what we call the LEAD, the Aegis Leap Intercept Experimental Program. And then, after we get through that phase, we'll talk about some threat representative targets and look at where we're going with the overall Navy Theater-Wide activities.

But, again, our concept is having multi-platforms, multi-tier, really improves the family of systems capabilities and the ability to respond to crisis response, as well as mature theaters. But, right now, we're trying to get the fundamental technology and the demonstrations in place for this high-atmospheric, high-endo capability.

Q: Sir, is it fair to say after one test success that hit-to-kill technology does work, or is the jury still out?

General Davis: Not just this one test, in that we've had both the Patriot test and we've had the THAAD test now that have demonstrated that I have the guidance, control, accuracy, and the processing that allows me to hit a bullet with a bullet. Prior to these two tests, we have done some demonstration tests, but I think the significance of both the Patriot and the THAAD test is these were -- [tape is switched out] -- all of these have been demonstrated as one integrated set, to include the missile in this particular case. So I think that's significant.

And the fact that we -- the other major difference is that we do a lot of hardware-in-the-loop modeling and simulation. We have run this intercept probably 1,000 times on a computer. And with the hardware-in-the-loop, we have a much higher degree of confidence, except for the unknown unknowns. And that's why the final flight test is so important. That's why it's so important to look at the different regimes, because there are different unknowns in those regimes.

And so, again, this is one step. There are still some issues as we address the entire spectrum of targets that we have to look at, as well as the regime we have to intercept those at. But hit-to-kill, I think we're feeling a little more comfortable now, because we've done it several times in the lower part of the atmosphere, and we're starting to demonstrate it both with our theater missile defense, THAAD, as well as you'll see with the National Missile Defense Program, a capability for hit-to-kill.

Q: But the reason I ask is that a lot of right-wing and conservative groups are firing faxes off this afternoon, praising this to the high heavens, that this finally demonstrates that it can be done. And I get from you there's measured optimism here, but more testing needs to be done before you can prove it finally.

General Davis: Well, I think the fact that you've demonstrated that you could do a hit-to-kill in the regime that we haven't done it before is a very significant accomplishment, especially in the 60- to 100-kilometer class. We've certainly done it exoatmospheric before, in some of our early-day tests, as well as Patriot does it below 25 kilometers. We've seen Aero actually, even though it's not designed as a hit-to-kill, it did have a hit-to-kill one time at a sort of a 50-kilometer class system. But I think it's significant because it demonstrates that the technology can be made to work.

Now, whether it can be made to work against all the threats and whether it can be made to work in all the regimes, that's what the rest of the -- and whether we can do it continuously, confidently, that's where the rest of our test program is going.

Q: Can you say, please, sir, which sensors were present to collect data? I saw a Halo Iris on the one chart, but besides the organic THAAD sensors and Halo Iris, what other sensors were there collecting data?

General Davis: We had the C-Lite Beam Director, which is an old laser program that has very good optics, at White Sands Missile Range. That is in fact where we had most -- a lot of significant data on the last test. We had the AST program, which is the Airborne Surveillance and Tracking Program, that gives us optical imagery. And then of course, the most important thing is we finally have the seeker information coming from the missile itself.

It's an Indium and Tendimide [sp?] MB Seeker that gives us some -- this is probably the most significant new data that we have that we hadn't had before, because it gives us background information. It gives us what you saw here, which is just phenomenal to me that we can see that type of imagery coming out of that. And then of course, all the range radar and the tracking optics associated with that.

Q: Do you have any national -- (off microphone)?

General Davis: I can't comment on that.

Q: Can you go over the intercept heights again for the next two tests?

General Davis: Yes. The next test will be done exoatmospherically, with a separating warhead. And then the third -- then we'll have another test, which will be in the mid-endo regime.

Q: Sixty to 100?

General Davis: No, that's -- we call 60 to 100 sort of the high-endo regime. And so we'll be going somewhat below 70 kilometers for the mid-endo. All those are subject to changes as we progress, but that currently is what our current test program is.

Q: The second test is going to be in the higher range?

General Davis: Exoatmospheric. Exo, above 100 kilometers.

[End of press conference.]