Mr. Riki Ellison:

(silence).

Mr. Riki Ellison:

Good afternoon, ladies and gentlemen. Welcome. I'm Riki Ellison, I'm the founder and chairman of the Missile Defense Advocacy Alliance. We founded the Alliance in 2002. It is a nonprofit Alliance that is focused on the education and advocacy of the development, deployment and evolution of missile defense. We believe missile defense makes the world safer and makes our nation safer.

Mr. Riki Ellison:

I personally got involved with missile defense in 1980 with President Ronald Reagan in 1983. His speech of the Street Defense Initiative began the relationship with Israel. Israel was one of the first ever to sign the MOU with President Reagan. In 1984, I had the opportunity to visit Israel in the Lebanon Israeli border and spend a couple of days up there, right after that fight that happened a year prior. We have visited Israel quite a bit during the early 2000s and mid 2000s as the missile threat with clear and apparent in 2006. And we have been a strong advocate for the development of, I think the world's greatest and best layered missile defense system that's in deployment and operation today. And now as you see the Iron Dome System that was first put out as an idea and put in place in 2007 and then funded jointly by the United States government and Israel started 2010. And that amount was, I think it about $1.5 billion and put in play to create this great system. The system is now 10 years old. We are now in the midst of probably one of the highest volume rocket [inaudible 00:07:16] that Israel has seen. The system has done very well. The system has a protected close to 4.5 million people.

Mr. Riki Ellison:

It has prevented a war. [inaudible 00:07:34] is absolutely vital and necessary regardless of your ability to have a left of launch offensive capability, which Israel has one of the best in the world, but the defense is clearly required and needed.

Mr. Riki Ellison:

So today we are very honored and very fortunate to have two great speakers to present to you a much more detailed and much more thoughtful analysis of both the actual threat, what it is, where it's going and what the systems that we have in place in our partnership between Israel and the United States in place to defend against that threat. Tal Inbar, a great friend of ours, he has testified and been in front of the United States Congress with us in 2016. He was with us in Berlin. [inaudible 00:08:30] fly him together with our NATO allies and had him give a threat briefing on the Iranian threat. He is a world expert. This is world expert. This is what he does for a living, for a passion. He is in Tel Aviv today. He lives in Tel Aviv. He's been there and has been on the phone with me during strikes that are happening on a daily basis. So I would like to pass that over and introduce you to Tal Inbar, great advocate expert on missile defense. Thank you.

Mr. Tal Inbar:

Thank you, Riki, for the kind words and the introduction and the invitation to this special event, and actually, it is under fire because what you heard before are some alerts. And then now several rockets got on its way to the Southern part of Israel and less than 30 minutes ago, at least three rockets came from the Northern part of Israel from South Lebanon.

Mr. Tal Inbar:

So this is not a theoretical discussion for us. So it's a reality of our daily life in the last few days and generally speaking for years. And today also marks a special event for Iron Dome. We've the first operational kill of an armed or a suicide UAV, alone from Gaza. So it was the first time we knew that Iron Dome has those capabilities, but for the first time in the operation to use, we knock down a UAV, fired against us. So it's an interesting day. We've a lot of challenges ahead. So if you could put the presentation, please, I want to go a little bit and explain what happened in the last few days. Started by the way, just this Monday we've several rockets fired from Gaza by Hamas against Jerusalem. And it was 2014 that the previous firing of some rockets from Gaza to Jerusalem... And by the way, it was during my presentation in a missile defense conference in that city. So next slide, please. Could you please, okay.

Mr. Tal Inbar:

So generally speaking, Hamas has two families of rockets. One family is imported rockets from Iran and from Syria and from various other sources, but this is now becoming obsolete. You can see on the next slide that the current line of Hamas rockets are domestically produced, basically on a foreign, initially on a foreign know-how. Some of the knowledge came from Iran, no doubt about it. And in this conflict here in Israel in this week, we saw the first use a massive use of hundreds of heavy rockets for a longer range of more than 100 kilometers. You can see the gray one with the letter A on it. So we saw a lot of those rockets recently. Next please.

Mr. Tal Inbar:

And we also been witnessed to several methods used by Hamas to counter the efficiency of our missile defense systems. One way is a saturation, large salvos of rockets in a short time period. And we are speaking about more than 100 work rockets per city for a period of time of less than five minutes and firing from a different [inaudible 00:12:44] simultaneously. This is another method that Hamas is thinking will be useful for them and low trajectory almost line of sight. We saw it also during this conflict. Next, please.

Mr. Tal Inbar:

And just as the current round of firing started, Hamas released some videos of large scale exercises that they conducted in an unannounced date. And now we can see for the first time in the open, several of the Hamas tactics, and you can see here some launchers, each of those launchers are again, locally manufactured and it contains eight rockets. Next, please. Next slide.

Mr. Tal Inbar:

Yeah. And you can see, this is the heavy rocket for long range. Eight of those rockets could be fired in several seconds from each of those launchers. Next.

Mr. Tal Inbar:

And you can see the loading of those very heavy rockets and they have all fixed wings and they are not being stabilized, which of course, affects their accuracy. But then again, the main idea of Hamas is targeting cities and cities are of course, not a moving target. So it doesn't matter for Hamas in which part of a city, they will hit. But actually the spread of the rocket is quite quite large. Next.

Mr. Tal Inbar:

And this is a shorter range around 40 kilometers. Next, the one you can see also those types of rockets. Next, please.

Mr. Tal Inbar:

And of course, all the rockets are fired from a distance. They could be fired remotely. They could also use the timer mechanisms to make some simultaneously fire the rockets from different places without putting the people that are firing the rockets in the proximity of the rockets. So they are more immune from immediate attack against the launchers. Next, please.

Mr. Tal Inbar:

Again, you can see the craftsmanship, and the, of course, I still remember the first, very crude rockets fired from Gaza in the early 2000s. And they came a long way and you can see the level of production. And then it is almost like a state owned facility that the produces those rockets. Next.

Mr. Tal Inbar:

So this is the rocket for 40 kilometers again made by Hamas. Next one.

Mr. Tal Inbar:

And the next one, we can see several more shots from the same reel, and then we'll move ahead. And this is the site of the night sky of Tel Aviv with a lot of Iron Drum interceptors. This is something quite unusual, even for us and for me. And I saw several times those type of interceptions above me, but to see for the same period of time, short period of time, dozens of Iron Domes Interceptors in the air, this is something that we didn't see. And you could see it in a minute in a short video. Next slide.

Mr. Tal Inbar:

You can see the Ben-Gurion airport and each of those tiny dots in the sky, you can see this is a interceptors. And by the way, last night, there was an Israeli airplane coming back to landing in Ben-Gurion airport, Tel-Aviv airport, and it was forced to make some circles in the air. And one of the passengers took a short video from the air. Next, please.

PART 1 OF 4 ENDS [00:17:04]

Mr. Tal Inbar:

One of the passengers took a short video from the air. Next, please. And you can see here, this is amazing because you can almost count those missiles. All of those are Iron Dome interceptors and you can see around 40 missiles at the same time, it was fired in the first night of the current round of rocket firing from Gaza. Next, please. We can see the next slide. And this is the result, this is from yesterday afternoon, or early evening. This is in the southern city of Sderot, and a small, five-years-old kid was killed during this attack. And you can see, this is a direct hit, a result of a very shallow trajectory of the rocket coming from Gaza. Next, please. And this is from the city of Tikva, very close to Tel Aviv, one rocket fell between three buildings, and a large fire was started, and you can see the results of the blast with all the windows shattered and so on.

Mr. Tal Inbar:

Luckily, no one got hurt in this attack. And again, it was a very heavy rocket. Next, please. In some parts, those are pictures that you can see on the Israeli social media all the time. People are finding some fragments of incoming rockets and also fragments from the interceptors, so we can see a lot of this, and even a small fragment of such a large rocket falling, it could cause serious damage. Next. Okay. And today, we saw the first use of very sophisticated, relatively, to the crude UAVs that the Hamas used in the past, and next slide, please. Hamas showed today this type of propaganda video from which they took those slides. And you can see the very, very close similarity in the design of this armed UAV, and Iran UAVs, which I believe is the basis of this design. Next, please. And also, we can find those types of armed UAV in the hands of the Houthis in Yemen. You can see the spread of knowledge from Iran to its proxies, it could be in Lebanon, it could be Hezbollah, it could be Islamic jihad, Hamas, and so on.

Mr. Tal Inbar:

And you can see how this system is constructed. And today, Israel shut down several of those UAVs, and one of the interceptions was carried out by an Iron Dome, again, the first ever a person that used an Iron Dome against the UAV. Next, please. And you can see here, the UAV is now just leaving the launch rail and heading towards our country. Next one. If you could show the video, this is one of the interceptions of Hamas UAV. It was done... This one specifically, was carried out by an air-to-air missile from one of our Air Force aircraft, so if you could then see the video, please. You could see it here, in the target, and it was destroyed by an air-to-air missile. Next one, please. This is the last one, so you can start looking at me. Just to wrap up a little bit, we are witnessing a real 360º of active defense now in operation, we've rockets from the south and rockets from the north, and UAV threats.

Mr. Tal Inbar:

And I didn't speak about the threat of incoming cruise missiles, but again, this is a major challenge and we know how to cope with it, but it will be the next phase, I believe, in future conflicts, like we see in Saudi Arabia and the cruise missiles fired by the Houthis, and the accurate missiles, the accuracy revolution that started several years ago. And we know for a fact that the knowledge of creating, and building, and then converting statistical rockets into accurate rockets is existing in both parts of our country, both in Lebanon by Hezbollah, and in the south.

Mr. Tal Inbar:

But we didn't see any use of a precise and accurate rocket yet here in Israel, but I think this is the next level, active defense, like Iron Dome, like [inaudible 00:22:39] and so on. And of course, the arrow is essential for our security, and it is my belief that it will be a major improvement of all maneuvering forces around the world. And just recently, we heard about the purchase of two batteries by the U.S. from Israel of Iron Dome. I believe we will see more and more use of this system in more than one theater of operations. Thank you.

Mr. Riki Ellison:

Thank you, Tal. That was an amazing rundown. How is your perspective, how has [inaudible 00:23:21], your friends, or react to this barrage of rockets in there? Is there a panic, is there confidence? What's going on? How are they reacting to having this happen right now?

Mr. Tal Inbar:

Well, it is unfortunate that the general public has got used to being bombarded with rockets for years. So in that regard, many peoples are not in panic during the siren. Of course, small children is a totally

different story. And I have an example here in my house, I have a daughter who is 14 tomorrow, by the way, and she's worried about some rockets during her birthday. And my boy is 12, and they are not used to get into the shelter, and they hear the sirens in the 1:15 AM or 3:00 in the morning. So it is quite the stressing situation for them. But generally speaking, the people here is very used to this type of situation in which, for several days, we have a large quantity of rockets, more than 1,300 already since Monday afternoon, but they also have a lot of confidence in the active defense and in the shelters that we have in most of our houses and apartments.

Mr. Riki Ellison:

Well, that clearly shows the confidence in the system that was put in play, and the vision of both our governments, and certainly your government developed that capability. One more question, but when you said there were 40, 40, that seems like a whole battery round of interceptors up there. Is that... I would assume that you would have to refill that battery to launch again, and the capacity issue, is that a concern now, or are we on top of the capacity as this thing continues to ramp up?

Mr. Tal Inbar:

Well, I cannot, of course, for obvious reasons, go into the specifics and in the numbers, but we don't have an endless amount of interceptors, and you are correct, we need some time to replace the canisters and so on. I won't go into details on this, but it was not an issue that prevented any city in Israel to be protected, in this round.

Mr. Riki Ellison:

Well, thank you. We're going to have a question and answer period after Dave, our next speaker, presents. If you want to ask questions, we've got the chat going on right now on YouTube. And if you want to email him directly at questions@missiledefenseadvocacy.org, we can do that. So I think we're going to go to Dave on the next set of questions and movement, because certainly, for most of us, we can't understand this kind of volume is being put out there from a very small, relatively small area, that we can't find ways to be able to stop it from going, as well as, we're doing the effective part of it, of shooting it down, but we've got to... Why is that such a challenge for Israel to be able to prevent that massive missiles, the size of the missiles that you saw on that? That'd be an interesting part. Ladies and gentlemen, our next speaker is the former Commander of the AAMDC, the Army Missile Defense Command.

Mr. Riki Ellison:

There's only about four of them in the world today that have special areas of responsibility, Dave was the previous European 10th AAMDC Commander. At that time, not today, but at that time, he was responsible for all planning and operations to support the defense of Israel with Army Air & Missile Defense. He is also very well-qualified, he is just out of the job of being the Commandant of our Army Artillery, our Air Defense School in Fort Sill, Oklahoma. He comes with it with a perspective that I think is invaluable at this time, with working with Israel, to give us those perspectives. Welcome, Dave.

COL (Ret) David Shank:

Thanks Riki, and really, thanks, many thanks to you and the entire Missile Defense Advocacy Alliance, for having me today and truly privileged to be here and to share my experiences as the 10th AAMDC Commander, as well as my time at Fort Sill as the Commandant. And Tal, you're a hard act to follow, but a great presentation and a phenomenal lay-down of the enemy capabilities that the Israeli, the state of

Israel, is facing right now. We talked briefly earlier about a 360-degree threat, and that is in fact what the state of Israel does face. I think first and foremost, if I may, the most important factor or key point during my time and my experience working with the Israeli Air Defense Forces and the Israeli Defense Forces, is the relationship, and the relationship that you establish personally with my peers, but it's also every service member in the formation, and the relationships that were established from peer to peer. There's something special, no doubt in my mind, that Israel is the strongest partner in that region to the United States, and it clearly shows.

COL (Ret) David Shank:

And it shows both from a U.S. perspective, but also from an Israeli perspective. I have many friends in Israel today because of my time as the 10th Army Air & Missile Defense Commander. As Riki mentioned, the capacity and the capability within the United States Army Air Defense Artillery inventory, is currently today a challenge.As most know today, the U.S. Army possesses 15 Patriot Battalions, eight THAAD batteries, two battalions that have contributed to the counter rocket, artillery, and mortar mission sets in Iraq and Afghanistan over the last 20 years. One of the newest formations in the U.S. Army Air Defense Artillery inventory is the first Maneuver Short-Range Air Defense battalion stationed in Germany. In addition to that, there are a number of AN/TPY-2, forward-based radars. And then as Tal mentioned, there are two Iron Dome batteries currently being tested.

COL (Ret) David Shank:

American soldiers are training with the intent to position these batteries to the locations yet to be determined by the U.S. Government and the Department of Defense. That's the current lay-down on what the U.S. Army possesses today, and for anyone who has served, there's a high demand, yet a low-density of these systems. Tal also talked about, the enemy possesses tens of thousands in this case, whether it's Hamas or Hezbollah, tens of thousands of rockets, easily outgunning the U.S. inventory.? So the interceptor, the number of interceptors, and the interceptor capability, is also again, not necessarily a high demand, but definitely low-density when you're comparing the U.S. inventory to an adversary's potential inventory, in this case, the Hamas and Hezbollah terrorist organizations. So where is the U.S. Army heading? Well, we talked a little bit about the first Maneuver SHORAD, the time, which is a Stryker-based platform, a weapons system with the Stinger missile capability mounted, all weather, day/night, with onboard sensors. Also being tested and experimented with is the program writ large, the Army Integrated Air & Missile Defense Program.

COL (Ret) David Shank:

And part of that program is the new Lower Tier Air Missile Defense Radar, as well as what's known as an Integrated Fire Control Network. What's the big deal about the Integrated Fire Control Network is the emphasis on Hall sensors connected, best shooter taking the engagement, so any sensor, best shooter. And then of course, the lasers that are also being experimented with and tested in the United States. So the capacity and capability, Riki talked a little bit about left of launch, how do we get to the left of launch? And I think there's three areas that will help us drive to get to the left of launch, that's the Intel, intelligence community, and sharing of that intelligence, not just within a U.S. network of intelligence, but with allies and partners, in this case, the state of Israel, that sensors, current sensors and the way forward, and how you network these sensors, whether it's a sensor directly targeting low-flight projectiles, such as whether it's some type of a 107-millimeter or 122-millimeter rocket, or a cruise missile.

COL (Ret) David Shank:

And then of course, space-based sensor capability. And then the third area of left of launch, I would submit, is the whole of government piece. And when you take and you look across not just the military aspect of whole of government...

PART 2 OF 4 ENDS [00:34:04]

COL (Ret) David Shank:

When you take and you look across not just the military aspect of whole of government, but you look across the diplomatic, the information and the economical side of it, and then other capabilities within the whole government, that one possesses to again, get to the left of the launch, possibly through cyber means. Integrated and layered defense is critical. And the state of Israel and the Israeli air defense forces, they have just that integrated and layered defense from Iron Dome to the Patriot Weapon System to David's Sling to the Arrow System that's been discussed. They have that layered defense capability, and we're clearly seeing that demonstrated today with regards to the low level threat and what the Iron Dome and the success that the system is having over the last 72 to 96 hours. Critical to capacity capability, getting to the left of launch, integrated in a layer defense is the network architecture.

COL (Ret) David Shank:

And so you must have that network capability redundancy where systems have the ability through technical means to talk to other systems, whether it's through a landline capability, whether it's through internet protocol, internet protocol capability, or whether it's through some type of other landline device or handheld for that matter. And then the last point again, I just wanted to reinforce was the relationships piece. That if you have the positive relationship, and you have that trust between one another, it's incredible what you can achieve.

COL (Ret) David Shank:

Real quickly, Riki, in the last 60 seconds, one of the best training events that I had the opportunity to participate in during my time as the mayor of [inaudible 00:36:11] was one of the Biannual Exercises [inaudible 00:36:15], in this case, Juniper Cobra. And we had the opportunity to actually air lift, [inaudible 00:36:21]in several years, actually air lift in a Patriot battery while using a C-lift capability to bring in the other soldiers in formation and equipment. Exercise. It's a joint exercise that's been ongoing since the early 2000s with the Israelis. And obviously we trained, you deploy go to war locations, you conduct terrain walks with alternate locations, and then it culminated with an actual live by joint live fire exercise with Israeli Air Defense forces which included Patriot and Iron Dome simultaneous to the engagement.

COL (Ret) David Shank:

Riki, I'll pause there and pass it back to you.

Mr. Riki Ellison:

Thank you, Dave. As you look And I think we can both agree, I think everybody agrees on it, Israel's got to fix most of the defense capability better than any place in the world. And starting at a layered capability on that. The application for our forward operating bases, that we have mass amount that we

don't have the capacity to fit. And it looks like the Iron Dome was performing with capability to take rockets from, I don't know, Tal, was it over 150 kilometers at some range at that point, that would seem to be in a very effective system for that transition over to forward operating basis. So we don't want to say it's some experimental thing because it's live combat is what we're doing here, and we're going to get better at that combat by the more we see, the more things that they were challenging with salvos, all the way through trying to challenge us.

Mr. Riki Ellison:

Where do we go from here? Do we need more capacity or do we need a newer system that can reduce the cost of intercept to lasers, et cetera, like that. And again, I don't think we could ever lead by have launched active missiles that you have to have, as you saw today with what's going on. I just wanted to just pop up real quick and have you give us a little perspective on where should we be going, because this [inaudible 00:38:38] is not going to go anywhere. It's going to continue to expand and get more complex. So is it a new architecture or is it the architecture Israel has, or is it a cheaper way to take care of this?

COL (Ret) David Shank:

Yeah, thanks, Riki, again. It starts with the architecture. You got to be able to talk, you got to be able to share data, you got to be able to share and track data and so forth. The US Army, again, in my opinion is moving in the right direction with the procurement of those two Iron Dome batteries.

COL (Ret) David Shank:

Iron Dome, as mentioned is celebrating 10 years since the first engagement. This isn't a new system. And they've demonstrated clearly on several occasions, several thousand occasions, if I may say so, that that it can put steel on target, so to speak. So Iron Dome has clearly demonstrated that it is capable of defeating mortars, rockets, unmanned aerial vehicles. And I know ongoing tests and experimentation against Cruise missiles as well. Some of the challenges with my experience from the US Army is the acquisition process. It's also the money. And so there are challenges with both money and the acquisition timeline that it takes to field a system as well, because at times, it may take five, 10, 15 years to field a system and the enemy has already changed their tactics and moved on to another crude or potentially elementary capability that the enemy is successful with.

COL (Ret) David Shank:

We talk about expeditionary. We talk about forward operating bases, how do you work on the dispersion, some of the passive measures, dispersion, the camouflage aspect of it, but ultimately it takes either a very sophisticated non-kinetic capability and a kinetic capability to provide that defense and ultimately the desire to have that layered defense to provide and protect those critical infrastructure.

Mr. Riki Ellison:

Thanks. Thanks, Dave. And we would be remiss not to talk about MDA because MDA has been the acquirer, not the US Army, not the US Air Force, with Israel to create this capability that they've done so well at doing. I would, the system is designed as we see for rockets. That Cruise Missile thing is not there yet for that. And that's still a gap as we all know, and as we move forward with it. I would now like to take this to the public and to the questions on board. And I have a good friend of MDAA's and good friend of mine, Retired Rear Admiral, Mark Montgomery, who was the former of three for Indopacom,

and also on the Solarium with our Congress today on cyber. So welcome, Mark. You can lead off with the questions.

RADM (Ret) Mark Montgomery:

Hey, thanks, Riki. First, I'll take the first question while we wait for more people to flow them in either an emails directly to MDAA or on YouTube and chat. And we do have some coming in there, so happy to pass those on in just a minute.

RADM (Ret) Mark Montgomery:

Tal, if I could start, the first question is with you. The US has some real issues with Cruise Missile defense. I thought David did a good discussion there of the challenges we've had. And Iron Dome, at least currently configured, not optimized for Cruise Missile defense, but Israel does have a great system in David's Sling. First is, are you seeing David's Sling being needed to be in operation and even over the last few nights or in general over the last year, or has the kind of threat that it's optimized for not been used regularly by the adversaries?

Mr. Tal Inbar:

Well, as usual, all good questions. And I try to answer diplomatically. First you will have to understand that the [inaudible 00:43:06] thing is much more expensive, but this is not the only a part of in the equation. It was designed specifically to cope with Cruise Missiles and maneuvering missiles, accurate missiles. And there is a, of course, some overlap in the capabilities between Iron Dome and David's Sling. So those two systems are complimentary to each other. And you have to also remember that, I'm living in Israel and we are used to improvise. And just recently there was an incident in which S200, very old SA5 missile was fired from Syria against one of our planes. And it traveled to the South part of Israel. And there was an attempt to intercept it, and it was not the first time. And at least in a few years, a few years ago, we fired the Arrow Missile against an anti- aircraft missile.

Mr. Tal Inbar:

So if there is a threat in which the Air Defense Forces are thinking that the best solution is to launch on David's Sling, they will do it. There is no limitation because it is costly and so on. So, this is not the case, but until now in this current round, we didn't have any need to use David's Sling because although Iron Dome is 10 years old since the first operation of use, it is improving through time and by the way, the cost is reducing. So it reduced every time of some new innovations are put in. So in the future, I hope that we won't see it in the next few days, but when we will have the threat of Cruise Missiles and of course maneuvering accurate rockets, sure, David's Sling is the answer. And the decision was made in the first place to add another layer of defense to Iron Dome between the Iron Dome and the Arrow Two. And don't forget them. They neglect Arrow 3, which is a space-based, it is operating in outer space.

RADM (Ret) Mark Montgomery:

Again, thanks. That's a great summary of the kind of the spread of Integrated Air Missile Defense across the highly capable Israeli systems. Speaking of Iron Dome and potentially utilizing it, David, you talked a little bit about the procurement of the two batteries. What do you see as the challenges for Iron Dome and the US systems? Are there going to be issues with the C2 or with link or how we do that? And if so, what's the kind of timeframe for resolving those?

COL (Ret) David Shank:

Thanks, Mark. And yeah. The integration and the connectivity is the greatest challenge. And that has been the focus area. It was the focus area when I departed Fort Sill, Oklahoma, and it continues to be the focus area. How do you gain that connectivity vice a standalone system? We're all familiar when you have a standalone system, if there's no possibility of any type of advanced early warning, whether it's voice, whether it's transmission through data, it can be very challenging, but again, connecting Iron Dome to the current architecture and the way forward architecture, as I mentioned earlier, the Army's Integrated Air And Missile Defense Program, which consists of several future capabilities that are currently being tested and experimented with.

RADM (Ret) Mark Montgomery:

I thank you very much. And of course you remind me, and I'm sure Tal will have all the background on this, that we have successfully integrated Arrow and Aegis in a way that makes the two of them enhanced and improve their capabilities and capacities. So certainly when you have two great partners like the United States and Israel, things like this are possible.

RADM (Ret) Mark Montgomery:

Tal, we've got a series of questions on YouTube about kind of about the nuts and bolts of Iron Dome. And I'll pass them to you as three questions. Take whichever ones you want. The first is, "What's the largest yield of the Hamas rocket warheads that you all are seeing?" The second is, "Is there an expectation that it might be non-conventional payloads on board?" And I think they're talking there about things like chemical and biological. And then third, "Is the damage that you're seeing in Israel now, is it from the warhead payload going off or is it really from just the rocket body?"

Mr. Tal Inbar:

Okay, so again, good questions from the audience. The exact weight of the warheads, it rises dramatically. And also, I want to keep in mind of everybody that the Hamas is not our only adversary in Gaza. There is the Islamic Jihad, the Palestinian Islamic Jihad with a whole different set of rockets. some of them are very, very heavy, more than 100 kilograms. And the today, Hamas announced a new rocket with a warhead weighing at 250 kilograms. So this is not, of course the weight of the explosives, but it's super heavy. So, this is the answer also to the question about the damage. And most of the damage is of course, inflicted by the explosives and the sheer weight of a heavy rockets that the debris could cause some damage to cars and windows and so on. But this is quite minor damage.

Mr. Tal Inbar:

As for non-conventional warhead, the chemical, biological... First of all, biological agents are not the best. It's not the best option to put them on a rocket. And we don't aware of any such capabilities by either Hamas, Hezbollah, or Islamic Jihad. And this applies also to chemical weapons. So this is not the case in which we are in any concern about this non-conventional threat, but again, if you could intercept high in the atmosphere, so this is again another layer of protection if some other scenario in the future, will put some chemical agents inside a rocket.

RADM (Ret) Mark Montgomery:

Thank you very much. That's great answers. If I could pick up on something and I hope I don't cause any aftereffects for Dave when I asked this question, but I think back to a time when the Army had JLENS, a series of dirigibles that supported the defense of the national capital region. Do you see a future in

which the introduction of the dirigibles with airborne radars that can create a good Cruise Missile and rocket picture. Do you think that could come back into the future for the US Army?

COL (Ret) David Shank:

Yeah, I do, Mark and while I'm not overly familiar with JLENS, I do know and understand the history behind it, and I've heard the stories firsthand, but over the horizon...

PART 3 OF 4 ENDS [00:51:04]

COL (Ret) David Shank:

... firsthand. But over the horizon sensor capability is critical. It is being tested and experimented with today by industry. And I think that it is the way forward. Mark, if I could, if I could go back to your previous three-part question to Tal, I just wanted to pile on if I may. And Riki mentioned this, Tal mentioned this, and I hit on it a little bit during my pitch, was the friendly forces, so to speak, has a limited number of interceptors, while we recognize that that several of our adversaries, the terrorist organizations previously mentioned and others globally, have tens of thousands of rockets in their arsenal. So it's imperative that it goes back to the network, but it goes also back to the technical means of these weapons systems, whether it's Iron Dome, whether it's Patriot and so forth, that each of these systems and the operators are defending their critical asset, meaning there's no missile wastage because we don't have those interceptors to waste.

COL (Ret) David Shank:

In the event if an enemy projectile is going to impact in the middle of the desert, as an example, there's no reason to engage that missile, that enemy projectile. And so missile waste is the first point. Second point is the debris aspect that you mentioned. Always a consideration. Obviously, very challenging and just as lethal at times as a projectile. So again, all the more reasons Riki discussed, getting to the left of launch before that enemy projectile even leaves the ground. But if and when it does leave the ground, that we have the capability and capacity, whether it's the state of Israel, whether it's United States, to engage that enemy projectile well in advance. Thank you.

Mr. Riki Ellison:

Mark, just a second. I'll just ask Dave. We're talking about joint. And I want to explore this a little bit. Israel's got the F-35. The F-35 is a phenomenal sensor platform that could help with what you're talking about of early warning, being able to distribute that aspect of it, and send strike in, et cetera. You've also, well, you deployed the THAAD there for the first time and you've got a TPY-2 there. So what they're doing over in Korea, before IBCS gets in play, you could force multiply your capacity pretty easily with that process. And I think CENTCOM's got to be looking at that aspect of it as well. And then I'll go back to what Mark said originally on the Aegis ship. I think we still have to deploy an Aegis ship there around it. So how do we bring all those capabilities that are sitting there? They're not connected yet. But that's where I think the future's got to be on that as we evolve through that. I just wanted to throw that out at you.

COL (Ret) David Shank:

Yeah, thanks. There's quite a bit of energy focused on that network of sensors, whether it is an F-35 queuing a Patriot weapon system and so forth. So you talk about some of the current operations

ongoing in the Pacific, CENTCOM has a keen eye on that. If it's one system queuing another system, if it's one system providing launch capability of another system, absolutely critical to get-

Mr. Riki Ellison:

Well, there's some point where if this continues to saturate and this that we're going to have to come in and help support on top of their capability. That's what those exercises were for that you ran, the Cobra. Is that near or are we not even close to that in terms of having the US come in to help?

COL (Ret) David Shank:

Well, there are plans in place, but there are also the decision makers. And ultimately, it's the Secretary of Defense from a military perspective. But the President of the United States I'm sure would weigh in on the decision-making as well. But yes, to go back, every one of those exercises, every one of the planning sessions, terrain walks, the entire... When I was a commander of 10th AAMDC, I took my key leaders with me and we walked the ground in Israel of some of the go to war, for lack of better terms, go to war locations, both primary and alternate, while also simultaneously receiving from our Israeli partners history lessons. And so we clearly understood not just the actions today and tomorrow, but what got us in this position in the first place.

RADM (Ret) Mark Montgomery:

Hey, Riki, this is Mark. If I could jump in on that and ask Tal a quick question. I would say I love the idea of the US joint capabilities, but we have to remember the geography, physics plays a role in this. Ships are really pressed to do this kind of low altitude detection from a distance. They would have to really close the shoreline, which puts them at risk for a different type of missile threat from both Hamas and Lebanese Hezbollah. So I'm not sure that would happen. The TPY-2 that you're thinking about, look, I have no idea where it's pointed, but I hope it's pointed towards Iran. And that's not an easily swingable thing. So that's not that valuable. I think though, and F-35 flying hours are pretty expensive for that mission.

RADM (Ret) Mark Montgomery:

But I'll tell you what's a great idea, and what you needled up to here, which is an idea of an army air search radar would be, could potentially be beneficial if the information from it could be reasonably transferred to the Israelis. But let me ask Tal a question. You showed great pictures there of those homemade missile system. Those look like OEM manufactured gear. And that's surprising and shocking. But they can't have all the materials they need. Is there a supply chain? When you think of left of launch like Riki. Riki likes F-16s for left of launch. I like ships capturing embargoed weapons for left of launch. Is there a supply chain that we can intercept that are bringing these materials into Gaza?

Mr. Tal Inbar:

Well, of course there is a supply chain and we have experience in catching some cargo ships with a lot of weapons. And we did this several times during the years with a lot of rockets. And by the way, anti-ship shore to ship missiles, Iranian-made and so on. So first, if a huge ship is coming towards Gaza, probably it will be detected. But a lot of the materials are either dual use, aluminum and ammonium perchlorate and so on, and you cannot inflict totally effective quarantine on technologies and raw materials. And we know this is the case in Yemen. This is the case with Iran. Of course, Iran is another issue because this is a state and so on. But then again, the efficiency of prevention is very limited. And I believe that in those types of rockets, it cannot be efficient at all.

Mr. Tal Inbar:

And you can see the sheer numbers of heavy rockets, thousands of rockets, heavy and long range, and tens of thousands with the medium to short range. So I believe it is too late to try to close the door from importing those parts and so on. And you have to also remember that those are not sophisticated weapons. This is an unguided rocket. And I cannot say how many rockets I built as a child, but many. And you know that today with the knowledge all over the internet, not only the dark net, you cannot close the door behind it. So it is a fact of life. It is another issue if we are speaking about accurate rockets and guidance kits that, for example, Iran is making, I believe for export. So this is another issue and we will have to deal with it in the future.

RADM (Ret) Mark Montgomery:

Thanks, Tal. Riki, I think we only have four minutes left. I want to ask each of the speakers if they want to take a minute or two to tell us what their biggest takeaway from this experience is.

COL (Ret) David Shank:

Sure. Thanks, Mark. Again, thanks, Riki and the MDAA for letting me have the opportunity to speak today and I really appreciate it. And I really cherish our friendship as well. I think the capabilities being clearly demonstrated by the state of Israel and the Iron Dome system. The two batteries that currently the US Army possesses, and that it has American soldiers on and is going through some testing, experimentation, and as mentioned previously, the networking. And can it pass data? Can it connect to other systems and sensors? Only time will tell. But clearly from a US perspective, we've got to pursue that layered defense, that integration. I strongly believe it starts with the network. And then you build that layered defense around a capable network so you can tie in all sensors and all shooters. And so you have no holes in your defense.

Mr. Tal Inbar:

Yeah. Just let me add to this. I think we should invest more in reducing the price of each interceptor. And to get some more batteries will be, of course, a blessed addition to our defensive capabilities. This goes, by the way, with thorough research about the incoming threats and capabilities of the future of the other side. So you have to have intelligence about their future plans in order to prepare your systems in advance. Laser, of course, it's another issue and we don't have the time to go into all the details. But of course, laser will be, no doubt about it, in the future integrated into a multi-layered defense system. So I don't think it will be the sole solution. It will be a complimentary part of this because of its inherent limitations. But it will be part of the defense. And of course, integrating Iron Dome, David's Sling, or other systems in ships, in future ships of the Israeli Navy, of course, this will be a force multiplier. And we'll probably see it in the not so far future.

RADM (Ret) Mark Montgomery:

Thanks, Riki. Over to you. Thank you, Tal. Thank you, Dave. Riki, pass it back to you to close us.

Mr. Riki Ellison:

Hey, thanks, Mark. Thanks, Tal. Thanks, Dave. Just a great discussion that probed and pushed intellectual thought on what we need to do, what we've done. But let's get down to the common theme that I think is so important for the world to know, the public to know. This system has defended close to five million people today. And there's a lot of people that think that, hey, if you can't have a hundred

percent missile defense capability, why deploy. And this is a valid reason, it is survival. And the fact that we're able to sustain not going into an all-out war because of this capability that's in place today is huge. And it's a lesson for the world to look at and see how you mitigate going to war by having this capability that defends the population and prevents you to escalate to another level. That's significant on that aspect of it.

Mr. Riki Ellison:

And I think the world's got to look at the fact that left of launch, it's not going to be a hundred percent. It's not even going to be a guarantee. Look at this inventory being thrown at you from not a very sophisticated capable group that's amassing these kinds of numbers. And we're not able to stop it, we're not. So you can't rely just on left of launch on offense. And I go back to this point, defense matters. We spend 2% of our DOD budget on defense, that's it. Everything else is going on offense. So this is a lesson for all of us. It's a huge lesson and it's a validation of what two partners, two countries can do together. Because you got to share the cost. That's a lot of money. And what we're doing in Israel, and we're sharing those experiences, is making us better at what we do to negate and defend against these threats.

Mr. Riki Ellison:

This is the threat of the future right now. It is escalating and thank God for Israel. Thank God for the US and thank God that we can do this together and get better. We got to get better because that other side is going to get better. So thank you all for taking the time today. It was so pertinent that we could talk to you from Tel Aviv where you're at at the point. And Dave, as a former commander of Europe, and that part of it, that's huge. I want to thank my staff. Kyle and Brandon knocked this thing out of the park to put this together this quickly. So we didn't get to everybody's questions. So if you want to send those questions to us or to Kyle, we'll be glad to filter those both to you, Dave and Tal, to be able to respond to those questions for them. So thank you for a great opportunity to educate on this particular subject in this particular time. It was great. Thank you very much.

Mr. Tal Inbar:

Thank you.

PART 4 OF 4 ENDS [01:06:34]