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## Iron Dome - The True Story

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The Commander in Chief of the Israeli Air Force, Major General Amir Eshel, in a recent interview published in the Air Force magazine in March 2015 has explicitly implied that the disappointment from the Iron Dome (I.D) is destined to come. The writing is on the wall. The Iron Dome will not live up to the public expectations, he stressed.

Why would Major General Eshel say something so drastic? Instead, he could have said something like: "The I.D anticipated results during a future conflict on our northern borders would be less impressive than those at 'Protective Edge Operation'". But he didn't say that. Instead, he chose rather blunt expression to describe a disastrous future situation. He also said that right after "Pillar of Cloud Operation" (November 2012) he knew that the I.D will not live up to the public's expectations, and that it is obvious that we will never see something similar to the results achieved during "Protective Edge Operation". He stressed that he did not say it because he needed an alibi, only pointing to its capabilities. A simple translation to the above: The I.D is not an adequate solution for the defense problems Israel confronts on its northern border.

Major General Eshel could have alleged: "That if we only had another 20 I.D batteries, we could protect the northern border." But he didn't. Why? Because he knows it is just a delusion. He further added a grim insight to the picture, indicating that possibly the I.D success could be attributed to the small weight of the warheads (18 kg. N.F) it had to tackle. How true. Yet we shall contend with this topic later.

A survey conducted by Rafi Smith institute published on February 17, 2015 in Ynet, reveals that 46% of the Israelis believe that Israel has won the "Protective Edge Operation" ("Operation Zuk Eitan" - in Hebrew, that began on July 8<sup>th</sup>, ending on August 26, 2014), while 20% believe that Hamas has won.

During the operation, 71% thought it was an Israeli victory, while only 6% considered Hamas as a winner. Are these random fluctuations in public opinion? It seems unlikely, due to the huge dispersion in the numbers. Can it be the beginning of the end of a continuous brainwashing process?

The I.D status may eventually not be that much different. Many (including some politicians), like the Commander in Chief of the Israeli Air Force (who probably was not reflecting only his own thoughts), perceive the growing myth around this project with a grain of salt, considering the concept that 13 I.D batteries are capable of defending the entire country (including Israel's northern border) as preposterous, if not downright hazardous. They also understand that many of Hezbollah missiles are out of reach of the I.D capabilities, realizing that even under optimal conditions, Israel will not be able to thwart the barrage of rockets hitting its territory. However, the public at large is led astray by false promises showered by the defense establishment, and thus touted by journalists and politicians at large.

As a starter, let's review several events that occurred less than a year ago, first noting the official statistics issued by the I.D.F (Israel Defense Forces) relating to "Protective Edge Operation":

Approximately 4,400 projectiles (rockets and mortars) were launched at Israel. 735 were intercepted by the I.D missiles. 3,665 landed in Israeli territories. 225 caused damages. These figures are no secret, as they were openly published in the Israeli media.

Defense officials' have claimed that the system's interception success rates were 90%, meaning that the I.D has missed only 82 projectiles. Thus, it is obvious that only a small number of those projectiles hit populated areas. Yet the I.D.F spokesperson insists that 225 projectiles did hit populated areas causing damages.

How can this contradiction be reconciled?

Bearing in mind the official I.D.F figures, it actually means a 76% success rate and not the official 90% it claims. Nonetheless, even this figure is a delusionary one.

The actual interceptions rate of the I.D missiles were approximately 40%, as shall be presented shortly.

The above I.D.F fallacy stems from the open space “bluff”, based on the following specifics:

1. Typical Israeli cities and towns are comprised of approximately 80% open spaces. These include parks, gardens, wide-open areas in between neighborhoods and suburbs, parking lots, roads, intersections, etc. In the southern cities of Ashdod, Ashkelon and Beer Shiva, those open spaces also include numerous sand dunes.
2. Yet, there are a very few areas with a radius greater than 150 meters of entirely empty space in any given neighborhood. (These assertions can be easily verified on Google maps).
3. Damage radius of a Grad rocket is less than 50 m due to its small warhead, meaning that most of the impact points will cause no serious damage, if at all.
4. Estimating the impact point of an incoming projectile cannot be achieved with an accuracy of less than 250 to 300m. A high-ranking defense official expert, Brigadier General (Ret.) Dr. Danny Gold, has stated during a lecture at an INSS (Institute for National Security Studies) Conference on June 2<sup>nd</sup>, 2013, that the actual estimation of the impact point is the size of an average neighborhood, which is approximately 400 meters.

The aforementioned facts lead to the following conclusions:

1. Each incoming rocket, aimed at residential, commercial or industrial areas has to be intercepted, due to the uncertainty of its landing point, as clarified above.
2. On the other hand, due to the vast open spaces (about 80% of any typical city area), if no interception of an incoming rockets ensues, 80% of the rockets landing at a city or town will cause no damage, and as for the 20% that will actually hit built areas, the chances of serious damages are slim due to the small damage radius of the rocket, and the light weight of its warhead, as aforementioned.
3. This allows for the false claim of successful interception, since no damage has occurred.

Now let's check the official figures published.

Out of 4,400 rockets and mortars that have been targeted at Israel, 45%-50% (i.e. 2000-2200 rockets and mortar shells) have reached their destination (residential and / or commercial / industrial zones). All of them had to be intercepted, as explained above. Similar ratios reached their targets during previous operations.

Since the I.D.F claims to have intercepted 735 projectiles, what happened to the other 1,300-1,500 that landed on populated areas?

The simple answer is that about 80% caused no damage, while the other 20% caused limited damage as specified by the official I.D.F statistics, and the previous explanations.

In a nutshell, this is the inglorious I.D.F "Open Space Bluff".

Considering each open space impact in an inhabited area as a successful interception, as it caused no damage, allows for the manipulation of the statistics, to suit the misguided and the biased media, thus brainwashing the public.

The foremost appalling failure of the I.D system was in the Gaza Perimeter (for which it was proclaimed to have been originally developed to protect). 2,650 rockets and mortars were launched at that area (not including the towns of Sderot, Ofakim and Netivot). Over 1,000 have hit targets, leaving in its wake immense corporeal devastation, causing approximately 20,000 people to abandon their homes, for nearly two months.

Out of the 2,650 projectiles 1,650 were mortar shell and Kamas rockets whose range is below 7 km. None of them can be intercepted, because the I.D has no interception capabilities at these short ranges. Out of the additional 1000 Grad rockets, only few were intercepted (possibly less than 10%).

Could this be considered a successful protection, as highly acclaimed defense officials continuously proclaim?

Analyzing the actual costs, reveal an extremely disturbing insight:

About 1,500 I.D interceptors were used during this operation, leaving Israel's arsenal almost empty. This was claimed by no other than Senator McCain during a hearing in Washington.

The direct cost of those interceptors was approximately 150 million dollar. The operational costs of the I.D batteries during the war were about 30-40 million which includes personnel and logistic costs. Thus, all-inclusive, the actual costs of operating the I.D batteries were approximately 200 million dollar.

On the other side of the equation is the question of how much damage did the I.D actually prevent. This can easily be estimated. Out of 735 successful interceptions, only 20% might have inflicted damages, while the rest headed into empty spaces in urban areas as was clarified before.

To estimate the damage saved by intercepting about 150 rockets that might have hit, one has to revert to the direct compensations paid by the state of Israel for the 225 rockets that had actually caused damage to residential, commercial or industrial areas. According to official publications, the sum was around 20 million dollars. How does the I.D prevent damages, if operating it costs around 200 million dollars, while payment for damages inflicted when it failed, are a meager 10% of that cost? What a delusion!

Another manipulated disinformation is the following:

A prominent Israeli economist and journalist, Sever Plotzker, who wrote in one of Israel's leading newspapers (Yedioth Ahronoth, August 15, 2014) an article suggesting the following: The damage caused by a single Grad costs 14.5 million dollars. Multiply it by 735 successful interceptions (assuming that all of them would have actually caused damages), and the figures are way beyond any imagination. So, how comes the actual compensations paid for the damages caused by 225 hits (about half rockets and half mortars) is a scanty 20 million dollars?

Recently, Maj. Gen. Dan Harel (general manager of Israel's Ministry of Defense) added more distortion to this matter. In an article (Calcalist, 19.11.2014) he estimated that the damage caused by a single Grad rocket hitting populated area is 13 million Israeli Shekels (less than \$4 million). According to his assertions, the damage is about a quarter of the previous figure (that has been shown to be detached from reality). At the same interview, he also stated that the exact cost of one I.D missile is 104,000 Dollar.

How can all these contradictory figures be reconciled?

Another fallacy is that the I.D saves lives. Those who really believe this kind of nonsense should bear in mind that the low casualty rate to Israelis should be

more accurately attributed to the crude nature of the Hamas rockets, that carry very lightweight warheads, and to the highly effective Israeli shelter system. A comparison of the I.D.F's series of apocalyptic propaganda images targeted to Western media, with video recordings of actual Hamas rockets strikes, clearly demonstrates the comical disconnect between the claimed effects of the Hamas rockets devastations, with the reality on the ground.

As for indirect damages this matter is far more complicated than meets the eyes, and can be manipulated even easier than the afore mentioned deliberate distortions. It depends on the war's duration, which part of the country's economy is paralyzed, and many other parameters that have nothing to do with any type of defensive or offensive military systems.

So far, we have discussed the I.D performance and its shortcomings in southern Israel.

However, the most worrying issue is its role in a possible conflict against Hezbollah in the north of Israel. According to officially published intelligence data, more than 100,000 missiles and rockets are aimed at Israel at any given moment. Even if the Israeli Air Force destroys part of that arsenal, and even if only 40% of it reaches targets in Israel, there would be more than 40 thousand projectiles that would have to be intercepted. Most would be simple Grad rockets, which carry 18 kg warhead.

Others would be medium and long-range rockets equipped with heavy warheads (few hundred kg. each) that are out of range of the I.D functionalities.

The most dangerous ones are the several hundred guided missiles (F-110 and M-600) carrying half-ton warheads each, with an accuracy of 30-40 m. from their targets.

The problem is both ballistic and economic.

Israel lacks the economic capabilities to sustain the billions of dollars required to defend its northern border utilizing only I.D missiles, which cost \$100 thousand each.

Furthermore, the I.D is no match to Hezbollah's tactical missiles (having terminal velocity of 1,000 m/s or more). Therefore, it's a futile delusion to assume that producing more batteries would protect northern Israel.

"David's Sling" ("Magic Wand") is the latest Israeli missile interceptor being developed, presumed to be an answer against Hezbollah's tactical missiles (having range of up to 300 Km). However, still being in undisclosed inception phase with no viable information about its cost, it could turn out to be an inadequate interceptor to thwart off the eminent threats against Israel, as the I.D is against the short range threats, for which it was originally acclaimed to protect.

To summarize: There is no feasible ballistic solution to the prevailing situation in any foreseeable future. Could the realization of all the facts listed above induce the Commander in Chief of the Israeli Air Force to come out so candidly in that interview?

This alarming situation requires a radical new conceptual change.

The only feasible solution to these threats is the new highly powerful megawatt class chemical laser (Skyguard) system. Once a megawatt class laser system is activated, it destroys at the speed of light any enemy projectiles that encroaches its range of 10 km (and with adaptive optics, up to 15 km).

It is capable of operating continuously using conventional fuels. Unlike conventional missile ammunition, which costs between \$100 thousand up to three million dollars each, laser interception costs approximately \$2,000, making this concept a classical non-profitable business for missile manufacturers. Could this be the cause for the crucially contagiously determined objection to the laser solution? That the manufacturers of the missile systems will not be able to profit from the continuous production of expendable missiles?

To impede this new laser weapon system concept, a whole cluster of bizarre fables have been concocted, all of them fabricated lies.

Following are few samples, highlighting their absurdities:

1. That it is extremely toxic. In fact, Laser exhausts gases are even less toxic than the vapors coming out of our car's exhaust, as their concentration is much lower, being lighter than air and diluted with helium.
2. That it is as big as the Yankee stadium and stationary. Actually the system is composed of three ordinary sized trailers, and is as mobile as the I.D, which is also comprised of three units.
3. That it has heat evacuation problems. In fact, the heat disperses with the exhaust gas vapors. The recommended safety distance from the laser system is only 100 meters radius (as compared with Patriot safety distance of 300 m.). Taking a close look at pictures of soldiers around an I.D launcher during launching, clearly reveal that they are crouching somewhere between 200 to 300 meters away from it. What does it infer on its gases' toxicity?

Recently, Solid State Laser (SSL) has been extolled as "the next thing" for intercepting mortar shells, thus several countries, including Israel, have been investing heavily in it. However, these intensive enterprises are actually developing Fiber Laser gun, which will be effective for very limited tactical military targets. Most devices have a power of 20-30 KW, with a range of 1-2 Km and a rather long lasing time. These guns can destroy some soft naval targets or light UAVs but have no capability against medium or heavy mortar shells. The developers hope to achieve a 100 KW level within the next 8-10 years. Even then, the defense wake of such a gun will be small (perhaps, the size of a battleship). Certainly, it could not be any substitute to the megawatt class Chemical Laser (that has a large-scale variety for strategic applications).

Even the fiercest adversaries of the chemical laser are decent enough to concede that Laser is the next thing to come. With all due respect, this is a sheer hypocrisy. Mainly because the megawatt class laser system (Skyguard) could have been available almost a decade ago, as its prototype (Nautilus) has been tested 46 times, destroying all the variant threats launched (100% success rate), all being the exact same types of rockets and mortars that are consistently being shelled at Israel and can be produced once ordered.

Constantly construing new fables about why the chemical laser concept is inoperative while continuously demanding that it requires overcoming additional imaginary obstacles, is not only misleading, but also detrimental to Israel's security.

The time has come to admit that tiered missile defense concept is a total economic absurdity and unfeasible. That its operative performance in short distances is indefensible, as was distinctly noticeable in the Gaza perimeter during "Protective Edge Operation".

Do we need more proofs to be convinced that it has no capabilities against "smart" missiles (such as M-600 or F-110)?

Will only a doomsday disaster convince the "missile addicts" to open their eyes, see the looming threats and change their minds?

Laurence J. Peter said: "Sometimes I wonder whether the world is being run by smart people who are putting us on, or by imbeciles who really mean it."

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