Syrian CWAs – Are they under control?

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Dirty News

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U.S. Attack on Iran Would Take Hundreds of Planes, Ships, and Missiles

Source: http://www.wired.com/dangerroom/2012/09/iran-war-plan/all/

Two U.S. Air Force F-15E Strike Eagles and a B-2 bomber fly in formation. *Photo: USAF*

Should the U.S. actually take Benjamin Netanyahu's advice and attack Iran, don't expect a few sorties flown by a couple of fighter jocks. Setting back Iran's nuclear efforts will need to be an all-out effort, with squadrons of bombers and fighter jets, teams of commandos, rings of interceptor missiles and whole Navy carrier strike groups — plus enough drones, surveillance gear, tanker aircraft and logistical support to make such a massive mission go. And all of it, at best, would buy the U.S. and Israel another decade of a nuke-free Iran.

There's been a lot of loose talk and leaked tales about what an attack on Iran might ultimately entail. Anthony Cordesman, one of Washington's best-connected defense analysts, has put together a remarkably detailed inventory of what it would take to strike Iran (.pdf), cataloging everything from the number of bombers required to the types of bombs they ought to carry. He analyzes both Israeli and American strikes, both nuclear and not. He examines possible Iranian counterattacks, and ways to neutralize them. It leads Cordesman to a two-fold conclusion:

* "Israel does not have the capability to carry out preventive strikes that could do more than delay Iran's efforts for a year or two." Despite the increasingly sharp rhetoric coming out of Jerusalem, the idea of Israel launching a unilateral attack is almost as bad as allowing Tehran to continue its nuclear work unchallenged. It would invite wave after wave of Iranian counterattacks — by missile, terrorist, and a boat — jeopardizing countries throughout the region. It would wreak havoc with the world's oil supply. And that's if Israel even manages to pull the mission off — something Cordesman very much doubts.

* The U.S. might be able to delay the nuclear program for up to 10 years. But to do so, it'll be an enormous undertaking. The initial air strike alone will "require a large force allocation [including] the main bomber force, the suppression of enemy air defense system[s], escort aircraft for the protection of the bombers, electronic warfare for detection and jamming purposes, fighter sweep and combat air patrol to counter any air retaliation by Iran."

But the first attack might actually be the easy part, writes Cordesman, an

expert at the Center for Strategic and International Studies.

A depiction of the ballistic-missile battle that could follow an American strike on Iran. *Illo: CSIS*

At the same time, the U.S. has to keep Iran from blocking the ultra-important Strait of Hormuz, the 21-mile-wide waterway through which flows around 20 percent of the world's oil and liquid natural gas supplies. And America has to protect its energy-producing allies in the Persian Gulf, or else there will be no oil or gas to send through the Strait.

That will be no mean task, Cordesman writes: "Iran can cherry pick its targets in an effort to pressure and intimidate the U.S. and Southern Gulf states. It can use long-range conventionally armed missiles or drones against large military or urban targets as terror weapons. It can attack sporadically and unpredictably in a war of attrition or attempt to 'swarm' U.S. and Gulf naval forces."

Some of this defensive work has already begun. To keep the Strait open, the U.S. has kept up a steady patrol of aircraft carriers and stationed gunboats, minesweepers, and robot subs in nearby Bahrain. To spot Iran's missiles — many of which can hit their targets in as little as four minutes — the U.S. is building a next-generation X-band radar station in Qatar. To knock those short- and medium-range ballistic missiles out of the sky, America has sold billions of dollars' worth of Patriot and Terminal High Altitude Air Defense interceptors to Saudi Arabia, Kuwait, and the United Arab Emirates. Those anti-missiles will be augmented by U.S. Navy cruisers and destroyers equipped with Aegis ballistic-missile defense systems — one of the most-proven components in the American interceptor stockpile.

But to make sure Tehran's missiles don't hit Riyadh or Kuwait City, the U.S. will have to take out Iran's eight ballistic-missile bases and 15 missile production facilities, and 22 launch facilities if a preemptive strike is ever ordered. America will "need to destroy as many missile launchers as possible … in order to reduce number

of incoming warheads," Cordesman writes. Each target will require two aircraft each — either carrier-launched F/A-18s or F-15Es and F-16Cs flying from nearby air bases — for a total of 90 jets. Auxiliary targets could include Iran's refineries, its power grid, its military bases, and its roads and bridges.

American jets and fighters will be pretty much free to fire at will — the Iranian air force is a joke, and its air defense systems don't have the sensors or the networking to seriously threaten U.S. jets. Still, those air defenses and enemy fighters will have to be taken out before they manage to get off a lucky shot.

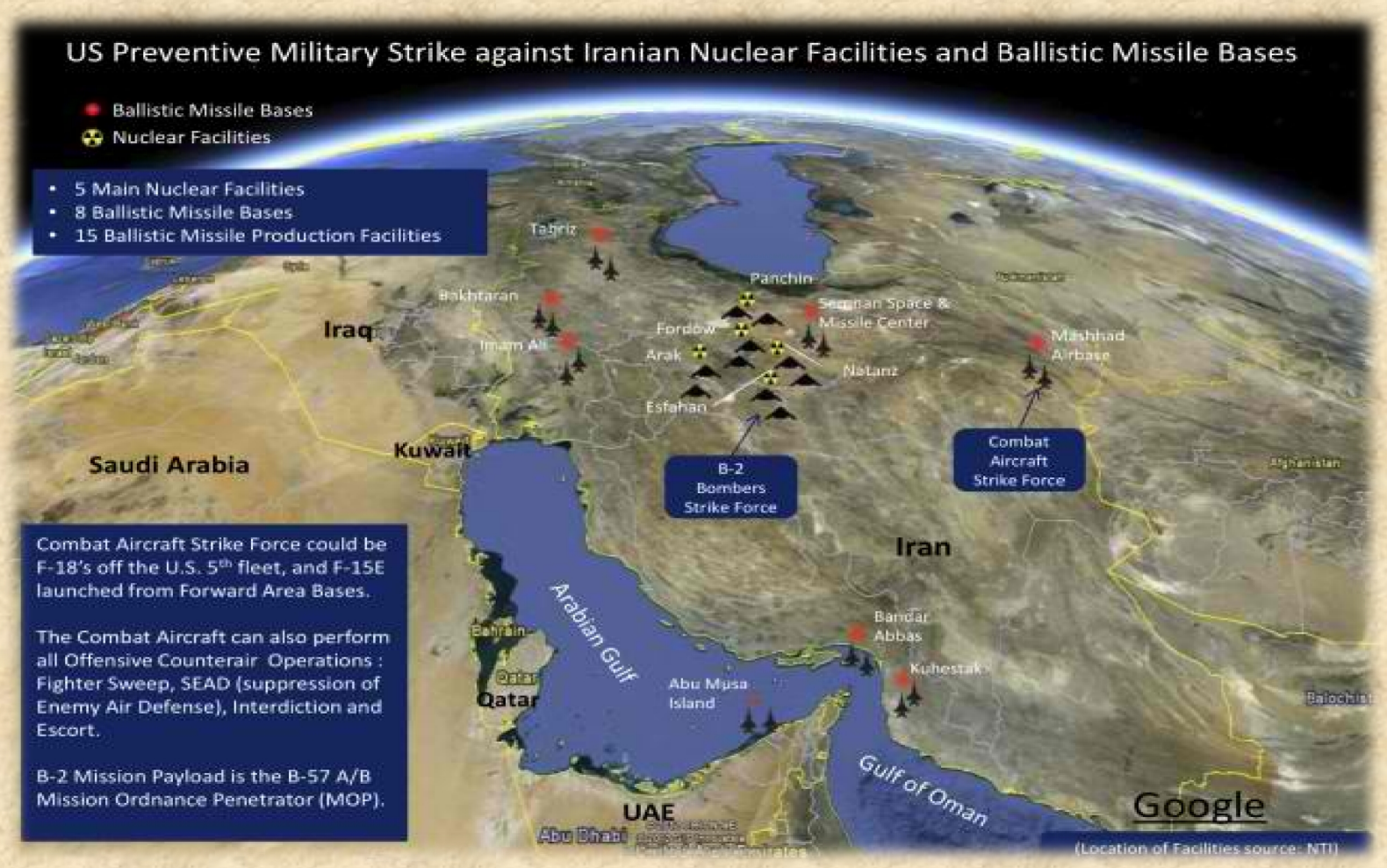
Drones will be deployed for further intelligence, "deception, jamming, harassment, or destruction of enemy forces and air defense systems." Special operations forces will conduct "direct action missions, special reconnaissance, and provide terminal guidance for attacks against valuable enemy targets." Somehow, attacks from Iran's terrorist allies — including Hamas and Hezbollah — will have to be blunted, as well.

And then, of course, there's the main attack.

Destroying each of Iran's five nuclear facilities will require a pair of B-2 bombers flying out of Diego Garcia. Every plane will carry two of the U.S. military next-gen, king-sized bunker-busters, the 30,000-pound GBU-57 Massive Ordinance Penetrator. The "GPS-guided weapon contain[s] more than 5,300 pounds of conventional explosives inside a 20.5 foot-long bomb body of hardened steel. It is designed to penetrate dirt, rock and reinforced concrete to reach enemy bunker or tunnel installations," writes Cordesman, who believes such bomb can set back Iran's nuclear ambitions for years.

Israel might — might — be able to pull off a similar strike, but only just barely. It'll require using a quarter of the Israel Air Force's fighters, and all of its tanker planes, leaving no aircraft for all these other secondary targets. The jets will have to hug the Syrian-Turkish border before flying over both Iraq and Iran. And that is not exactly friendly territory.

"The number of aircraft required, refueling along the way and getting to the targets without being detected or intercepted would be complex and



high risk and would lack any assurances that the overall mission will have a high success rate," Cordesman writes.

And even if the reactors are hit, the "Iranian retaliation will have a devastating regional consequences," he adds. You don't even want to know what the Middle East would look like the day after Israel attempts a *nuclear* strike on Iran.

Which leaves the American attack option. It may be technically possible. "It's clear that if the United States did it we would have a hell of a bigger impact," Defense Secretary Leon Panetta said in the spring. Cordesman would rather see negotiations instead: "The brief shows just how dangerous any war in the Gulf could be to the world's economy." Some politicians may be calling for a preemptive strike on Iran. There's a reason military planners are so wary.

Read also: http://csis.org/files/publication/120906_Iran_US_Preventive_Strikes.pdf

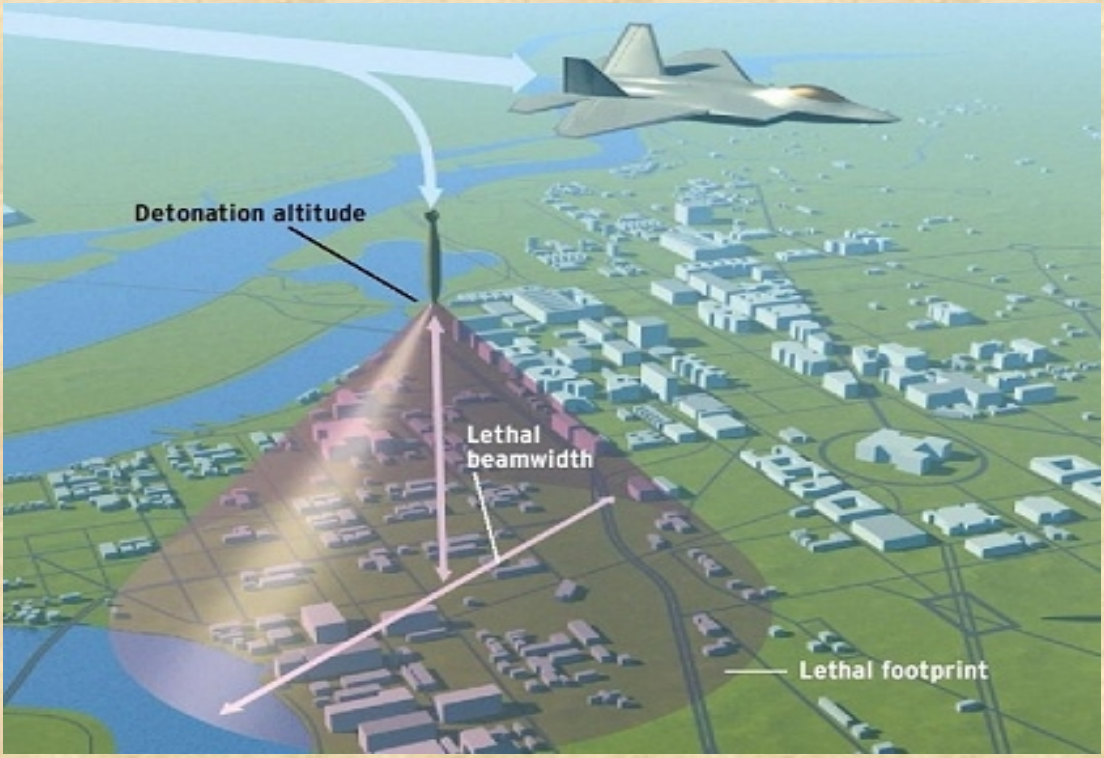
Israel Might Send Iran Back to 'Stone Age' with Electromagnetic Pulses

Source:http://www.almanar.com.lb/english/adetails.php?eid=67961&frid=31&seccatid=91&cid=31&fromval=1

British newspaper Sunday Times described one of Israeli occupation forces' 'surprises' it would deploy in case of a military strike in Iran - electromagnetic pulses that would take the nation off grid.

According to the Sunday morning report, the Zionist entity could 'cripple' the Islamic Republic's power grid with electromagnetic pulses as part of a concerted attack to halt Iran's military nuclear program, which could "send Iran back to the Stone Age."

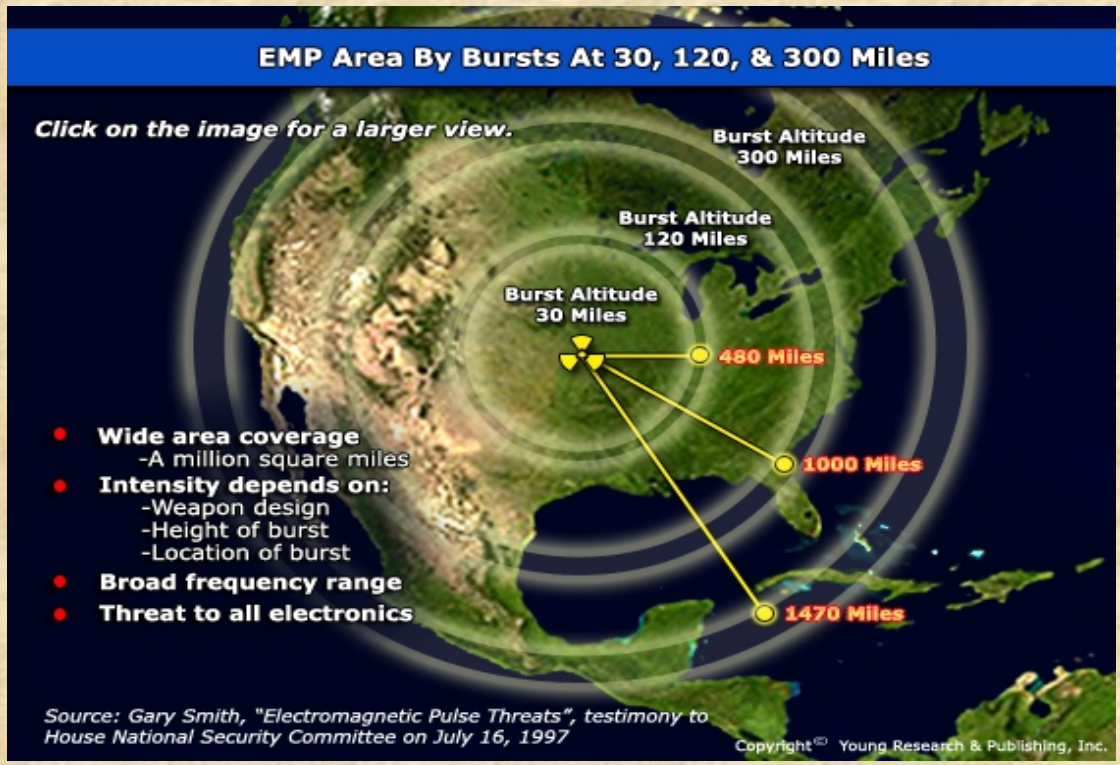
"As part of an assault on Iran's quickly developing nuclear program, Israelis could hobble the Islamic Republic's electric and electronic power sources which could 'send Iran back to the Stone Age,'" according to ynewsnet.com.



American defense specialist Bill Gertz is quoted as saying that US intelligence agencies have reported "growing concerns that Israel will conduct a strike on Iran using a high-altitude nuclear burst aimed at disrupting all electronics in the country."

However, a pulse can also be produced by non-nuclear means more specifically by deploying military versions of microwave generators, the report claimed.

Uzi Rubin, who helped engineer Israel's anti-missile shield, is quoted in the newspaper as saying "the use of a nuclear device even for non-lethal use such as EMP is out of the question. There are methods to operate EMP from the ground."

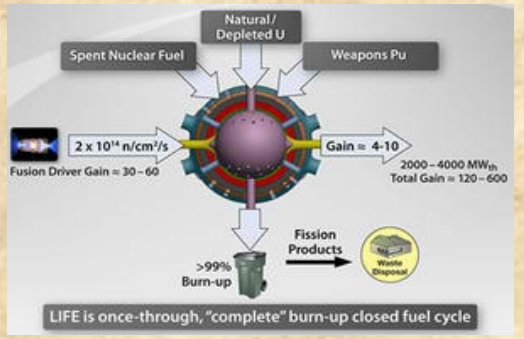


Nuclear waste-burning technology to make nuclear energy more appealing

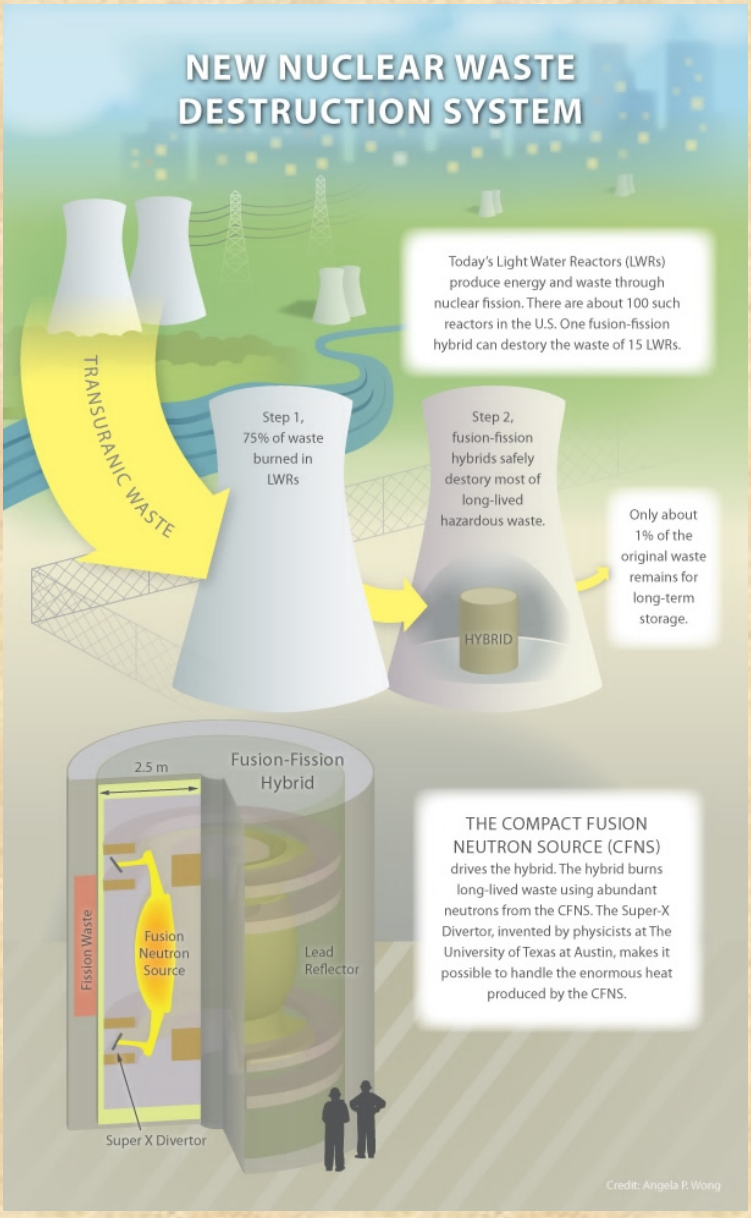
Source: http://www.homelandsecuritynewswire.com/bull20120913-nuclear-wasteburning-technology-to-make-nuclear-energy-more-appealing

University of Texas at Austin physicists have been awarded a U.S. patent for an invention that could someday be used to turn nuclear waste into fuel, thus removing the most dangerous forms of waste from the fuel cycle.

The researchers — Mike Kotschenreuther, Prashant Valanju, and Swadesh Mahajan of the College of Natural Sciences — have patented the concept for a novel fusion-fission hybrid nuclear reactor which would use nuclear fusion and fission together to incinerate nuclear waste. Fusion produces energy by fusing atomic nuclei, and fission produces energy by splitting atomic nuclei.



Schematic of hybrid fusion-fission reactor // Source: stanford.edu



The process of burning the waste would also produce energy. The researchers' goal is to eliminate 99 percent of the most toxic transuranic waste from nuclear fission reactors.

"The potential for this kind of technology is enormous," said Mahajan, professor of physics. "Now that we have the patent, we hope this will open up opportunities to engage with the research and development community to further this potentially world-changing technology."

A University of Texas at Austin release reports that the researchers' patent covers a tokamak device, which uses magnetic fields to produce fusion reactions. The patented tokamak is surrounded by an area that would house a nuclear waste fuel source and waste by-products of the nuclear fuel cycle. The device is driven by a transformational technology called the Super X Divertor.

The Super X Divertor is a crucial technology that has the capacity safely to

divert the enormous amounts of heat out of the reactor core to keep the reactor producing energy.
Toxic nuclear waste is stored at sites around the United States, and the need to store nuclear waste is widely considered to be a major disadvantage associated with nuclear energy.
The physicists' invention could someday drastically decrease the need for any additional or expanded geological repositories, making nuclear power cleaner and more viable.

The patented hybrid reactor is currently in a conceptual phase.
The Super X Divertor, however, is being installed as the centerpiece of a $40 million upgrade of the MAST tokamak in the United Kingdom. This installation is a critical step forward in testing the Super X Divertor experimentally. It is not covered by the U.S. patent but is the technology invented by the University of Texas at Austin physicists.

Electromagnetic pulse could knock out U.S. power grid

Source: http://www.nextgov.com/defense/2012/09/electromagnetic-pulse-could-knock-out-us-power-grid/58069/?oref=ng-dropdown

U.S. power grids and other civilian infrastructure are not prepared for electromagnetic pulses that could result from weapons or violent space weather, according to testimony at a congressional subcommittee hearing Wednesday.

Panelists at the House Homeland Security Subcommittee on Cybersecurity, Infrastructure Protection and Security Technologies, told Chairman Dan Lungren R-Calif., that there were serious flaws in the nation's infrastructure that could allow for EMP events to shut down power and communications for extended periods of time.
"Our civilian grid, which the Defense Department relies upon for 99 percent of its electricity needs, is vulnerable to these kinds of dangers," Rep. Trent Franks, R-Ariz., testified during the hearing. Franks, one of the leaders of the Congressional EMP Caucus, sponsored legislation in 2011 to protect U.S. infrastructure in the event of an attack by an EMP weapon.
Michael Aimone, a director of business enterprise integration at Defense, said the Pentagon had pursued a "two-track approach" to mitigate the impact an EMP attack could have on Defense facilities. He said his plan relied on both in-house capabilities to maintain power and electronics and a means to communicate and coordinate with outside partners.
"DoD recently adopted an explicit mission assurance strategy, which is focused on ensuring operational continuity in an all-hazard threat environment," Aimone said.
EMP disruptions and attacks can be triggered by various events, including high-altitude or low-altitude nuclear weapons detonations, locally based radio frequency weapons, and solar weather. One of the largest impacts from an EMP-based disruption was in Quebec in 1989, when nearly 6 million people lost power because of a geomagnetic storm.
Brandon Wales, of the Homeland Security Department's National Protection and Programs Directorate, said DHS was working with federal agencies on contingency plans for an EMP event. He said Federal Emergency Management Agency was establishing lines of communication with key agencies in case an EMP event occurs, and that Homeland

Security Secretary Janet Napolitano had commissioned a report in 2011 to study the impact of space-based EMP attacks.

"DHS has pursued a deeper understanding of the EMP threat, as well as its potential impacts, effective mitigation strategies, and a greater level of public awareness and readiness in cooperation with other federal agencies and private equipment and system owners and operators through various communications channels," Wales said.

Common standards for power grid equipment are a major issue according to Joseph McClelland, director of the Office of Electric Reliability at the Federal Energy Regulatory Commission. He said current standards to protect infrastructure and equipment do not address the many levels within the power grid and should be updated.

"Protecting the electric generation, transmission and distribution systems from severe damage due to an EMP-related event would involve vulnerability assessments at every level of electric infrastructure," McClelland said.

Chris Beck, president of the Electric Infrastructure Security Council, said the cost of protecting key infrastructure from EMP attacks was small, and added the bigger problem was getting the word out about the issue.

"The primary needs seem to be for education to increase awareness and willingness to address the problem, and for coordination to address the complex government and corporate administrative structures of even the most critical infrastructures," Beck said.

Public interest in EMPs piqued during the Republican primaries, when former Speaker of the House Newt Gingrich explained the threat of the EMP weapons during his stump speeches. He issued a statement following a recent severe storm in the Washington area, saying the power outages were just a taste of what the scenario following EMP weapon would be like.

Power lines to Iran's enrichment facilities cut, damaging centrifuges

Source:http://www.homelandsecuritynewswire.com/dr20120918-power-lines-to-iran-s-enrichment-facilities-cut-damaging-centrifuges

The covert campaign against Iran's nuclear weapons program continues.

The chief of Iran's nuclear program said yesterday that saboteurs tried to disrupt Iran's uranium enrichment plants by bombing power lines on which the uranium enrichment centrifuges housed in these facilities depend.

Fereydoun Abbasi, the head of Iran's Atomic Energy Organization (AEOI), made his remarks in Vienna at the International Atomic Energy Agency (IAEA) annual general conference. Abbasi appeared to hint that IAEA personnel may have been involved in the sabotage, saying: "Terrorists and saboteurs might have intruded in the agency and might be making decisions covertly."

WorldNews reports that yesterday, 17 August, electric power lines supplying the fortified Fordow uranium enrichment site near Qom were cut with the use of explosives. Abbasi admitted that the power disruption causes damage uranium centrifuges at the site, although he did not provide additional details.

"Then, in the early hours of next morning (Wednesday, 18 August], agency [IAEA] inspectors requested an unannounced inspection. Does this visit have a connection to that detonation?" Abbasi asked, speaking through a translator.

He added that the power lines to the Natanz uranium enrichment plant have also been hit by a blast.

Iran is getting more closely involved with another non-conventional weapon program in the region – Syria's chemical weapons program. *Der Spiegel* reports that at the end of August, as the anti-regime insurgency continued to spread, the Syrian military conducted a series of tests of systems designed to carry chemical warheads. The tests were conducted near the chemical weapons research center at Safira, at a site called Diraiham in the desert near the village of Khanasir east of the city of Aleppo.

The tests were conducted with five or six empty shells, fired from tanks and aircraft, designed for delivery of chemical agents.

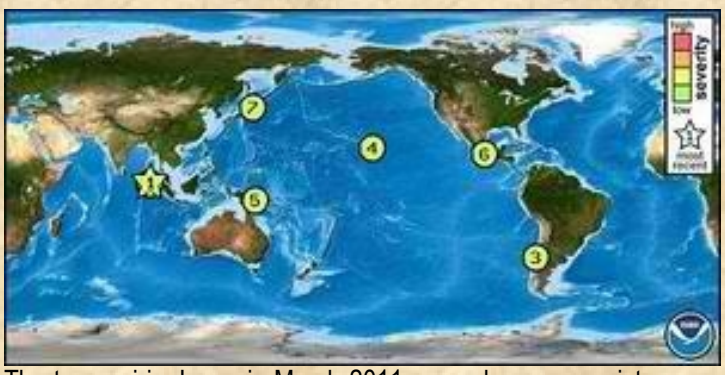
Iranian officers were flown to site by helicopter to observe the tests.

Spiegel notes that the Safira site is one of Syria's major chemical weapons development facilities, and that many Iranian and North Korean engineers work there testing sarin, tabun, and mustard gas on animals.

Seventy-four nuclear reactors in tsunami-risk areas

Source: http://www.homelandsecuritynewswire.com/seventy-four-nuclear-reactors-tsunami-risk-areas

Regions containing nuclear plants vulerable to tsunami andearthquake // Source: thaidive.org



The tsunami in Japan in March 2011 caused a series of breakdowns in disaster-related safety procedures, resulting nuclear disaster. A scientific study headed by Spanish researchers has, for the first time, identified those nuclear power plants which are more vulnerable to suffering the effects of a tsunami. In total, twenty-three plants, in which there are seventy-four active nuclear reactors, are located in dangerous areas in east and southeast of Asia, including Fukushima I.

Tsunamis are synonymous with the destruction of cities and homes, and since the Japanese coast was devastated in March 2011, we now know that they cause nuclear disasters, endangering the safety of the population and pollute the environment. Tsunamis are still difficult to predict, and tsunamis which are potentially likely to cause a nuclear disaster more difficult still, but a team of scientists have assessed "potentially dangerous" areas which are home to completed nuclear plants or those under construction.

A Spanish Foundation for Science and Technology (FECYT) release reports that in the study published in the ***Natural Hazards***, the researchers drew a map of the world's geographic zones which are more at risk of large tsunamis. Based on this data, twenty-three nuclear power plants with seventy-four reactors have been identified to be located in high risk areas. One of the nuclear power plants located in tsunami-prone areas is Fukushima I.

Out of the twenty-three plants, thirteen, with twenty-nine reactors, are active; another plants, with twenty reactors, are being expanded to house nine additional reactors; and there are seven new plants under construction with sixteen reactors.

"We are dealing with the first vision of the global distribution of civil nuclear power plants situated on the coast and exposed to tsunamis," explained José Manuel Rodríguez-Llanes, coauthor of the study and researcher at the Center for Research on the Epidemiology of Disasters (CRED) of the Catholic University of Leuven in Belgium. The authors used historical, archaeological, geological, and instrumental records as a base for determining tsunami risk.

Despite the fact that the risk of these natural disasters threatens practically the entire western coast of the American continent, the Spanish/Portuguese Atlantic Coast, and the coast of North Africa, the Eastern Mediterranean, and areas of Oceania, areas in South and Southeast Asia are especially at greater risk due to the presence of nuclear power stations.

For Debarati Guha-Sapir, another coauthor of the study and CRED researcher, "the impact of natural disaster is getting worse due to the growing interaction with techno-logical installations."

China: a nuclear power in the making

Some twenty-seven out of sixty-four nuclear reactors which are currently under construction in the world are found in China. This is an example of the massive nuclear investment of the Asian giant. "The most important fact is that nineteen

(two of which are in Taiwan) out of the twenty-seven reactors are being built in areas identified as dangerous," state the authors of the study.

In the case of Japan, which in March 2011 suffered the consequences of the worse tsunami in its history, there are seven plants with nineteen reactors at risk, one of which is currently under construction. South Korea is now expanding two plants at risk with five reactors. India (two reactors) and Pakistan (one reactor) could also feel the consequences of a tsunami in the plants.

The ghost of Fukushima

"The location of nuclear installations does not only have implications for their host countries but also for the areas which could be affected by radioactive leaks," said Joaquín Rodríguez-Vidal, lead author of the study and researcher at the Geodynamics and Paleontology Department of the University of Huelva.

According to the study, the lessons of the Fukushima accident should be learned. For the authors, prevention and previous scientific studies are the best tools for avoiding such disasters. "But since the tsunami in 2004 the Indian Ocean region is still to take effective political measures," warn the researchers.

The Fukushima crisis took place in a highly developed country with one of the highest standards in scientific knowledge and technological infrastructure. "If it had occurred in a country less equipped for dealing with the consequences of catastrophe, the impact would have been a lot more serious for the world at large," claim the experts.

Rodríguez-Vidal recommends, therefore, that the drafting of more local analyses that consider the seismic amplification of each nuclear power plant and determine the adaptation of installation identified in the study.

— Read more in Joaquin Rodríguez-Vidal et al., "Civil nuclear power at risk of tsunamis," Natural Hazards 63, no. 2 (September 2012): 1273-78

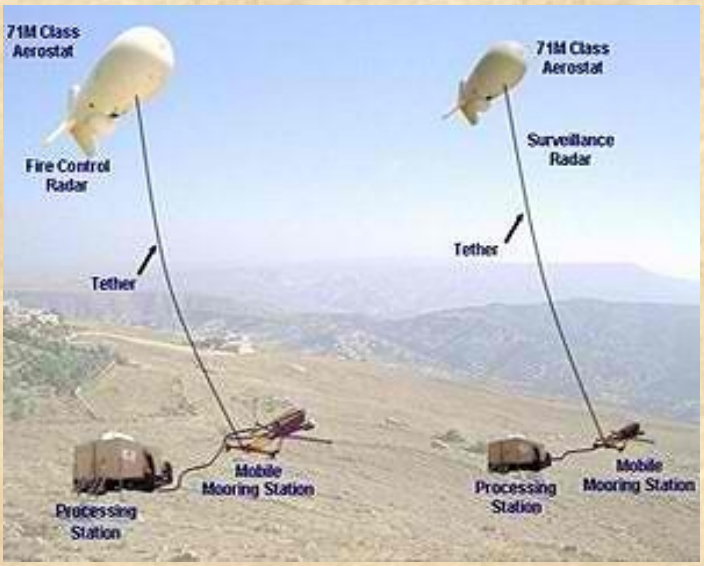
The Silent Threat

By Peter Hannaford

Source: http://spectator.org/archives/2012/09/21/the-silent-threat

The U.S. remains woefully undefended from missile attack. Will JLENS survive sequestration?

Riots over the Middle East and South Asia get everyone's attention, but a clear and present danger to the United States homeland exists that virtually no one is talking about and for which we have no defense: missile attack.



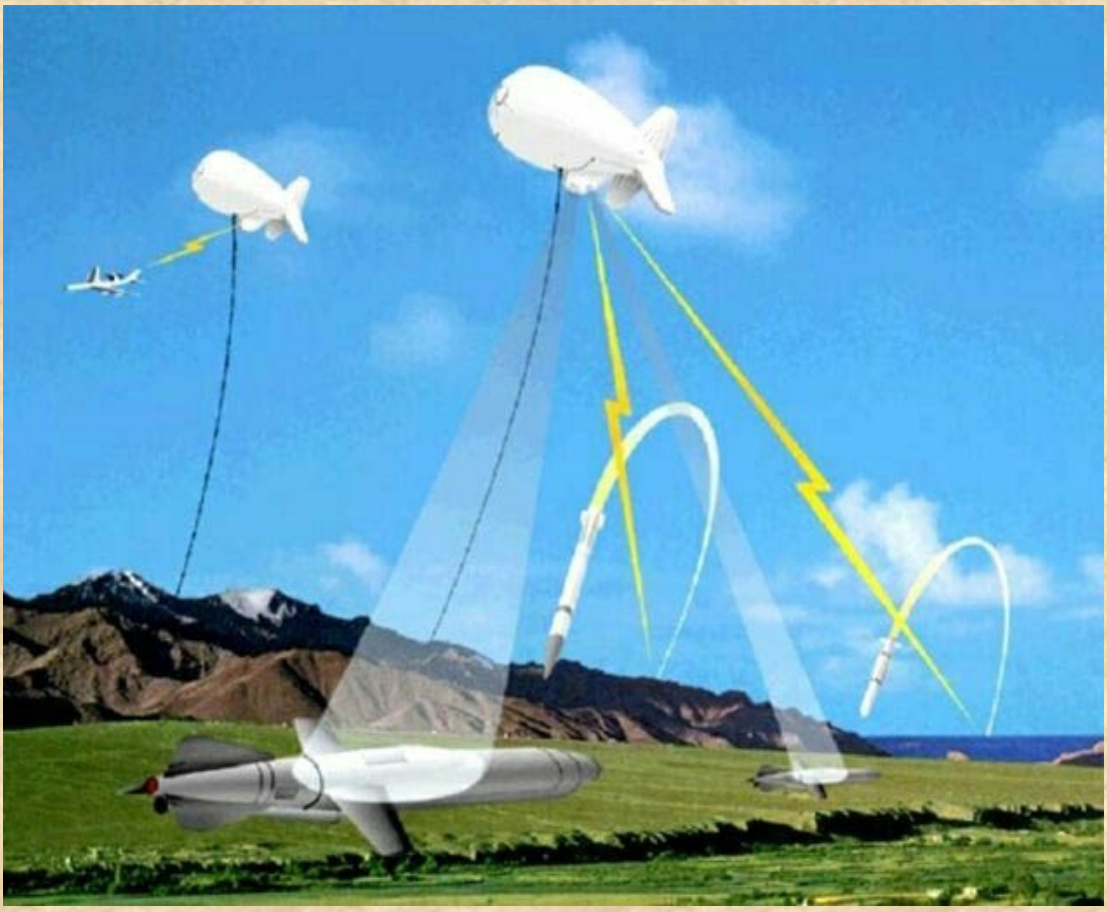
A Russian military officials says the recent covert visit of one of their submarines to the Gulf of Mexico proves that they could, without difficulty, launch a missile high over the U.S. that could trigger the explosion of an Electro-Magnetic Pulse (EMP) bomb that would shut down virtually all electrical and electronic activity in a large swath of the nation. There would be no radiation, no deaths -- "only" economic paralysis and chaos.

Add Iran and North Korea to the list of potential launchers of such a weapon.

While we have worked for months to develop missile defense capabilities in Europe to protect against a possible Iranian attack there, we have only tested such systems from bases in California and Alaska.

Nothing is ready to deploy and given the threat of "sequestration" of large amounts of defense funds, that situation is unlikely to change.

While Congress and the Administration stew and stall over the sequestration issue, the danger is both clear and present and there is something we can do to protect the U.S. homeland from such attacks. It is called the **Joint Land Attack Cruise Missile Defense Elevated Netter Sensor**. That mouthful is shortened to JLENS.



The Army developed JLENS to detect, identify, track and engage multiple hostile targets, including low-flying cruise missiles, as well as those launched from submarines and merchant vessels. The threat is that such attacks might involve EMP, chemical or biological weapons.

JLENS is deceptively simple, consisting of two lighter-than-air ships that lift to 10,000 feet (or more) both a fire-control and surveillance radar from where they detect potentially hostile targets at ranges of more than 200 miles. It gives field commanders considerable advance warning of threats. The system was tested successfully last April at the Utah Test and Training Range, destroying a simulated hostile cruise missile with a Patriot missile.

Development of JLENS has involved an investment of $2 billion so far. The next step is to answer requests from combat commands for this system by testing it again in the field to fine-tune it. Congress appropriated $40.3 million for such a test; however, before it could be conducted, the Department of Defense asked Congress to allow these funds to be reprogrammed for other purposes, presumably including budget balancing in the face of sequestration.

Since its creation in the 1950s, the Committee on the Present Danger has focused on the changing nature of threats to the United States. With the potential threat to the U.S. homeland increasing daily, the Committee has written to the Secretary of Defense to urge him to withdraw the request to reprogram the funds so that development of JLENS can proceed. Its cost, in the greater scheme of things, is low when measured against the nature and growth of the threat to our homeland.

Mr. Hannaford is member of the board of directors of the Committee on the Present Danger.

This Is What A US Strike On Iran's Nuclear Facilities Could Look Like

Source: http://www.businessinsider.com/this-is-what-a-us-strike-on-irans-nuclear-facilities-would-look-like-according-to-csis-2012-9?goback=.gde_2830497_member_161898992

Washington D.C. foreign policy think tank the Center For Strategic & International Studies took a long hard look at what it really means to thwart Iran's nuclear ambitions, what it would take, and what it could lead to in a report released yesterday.

The speculation that Israel can go it alone against Tehran remains, but the specifics of what's required by a US attack to put the nuclear program in the dust is outlined in detail. At least 16 F-18s, and 10 B-2 bombers carrying 30,000 pound Massive Ordnance Penetrator bombs, would initially be required by US forces.

Iran's retaliation would be another story entirely with a massive incoming missile salvo directed about the entire region. When that happens a full Ballistic Missile War could ensue with untold US space, air, sea, and land elements coming into play.

Some illustrations of the possible outcomes are below.

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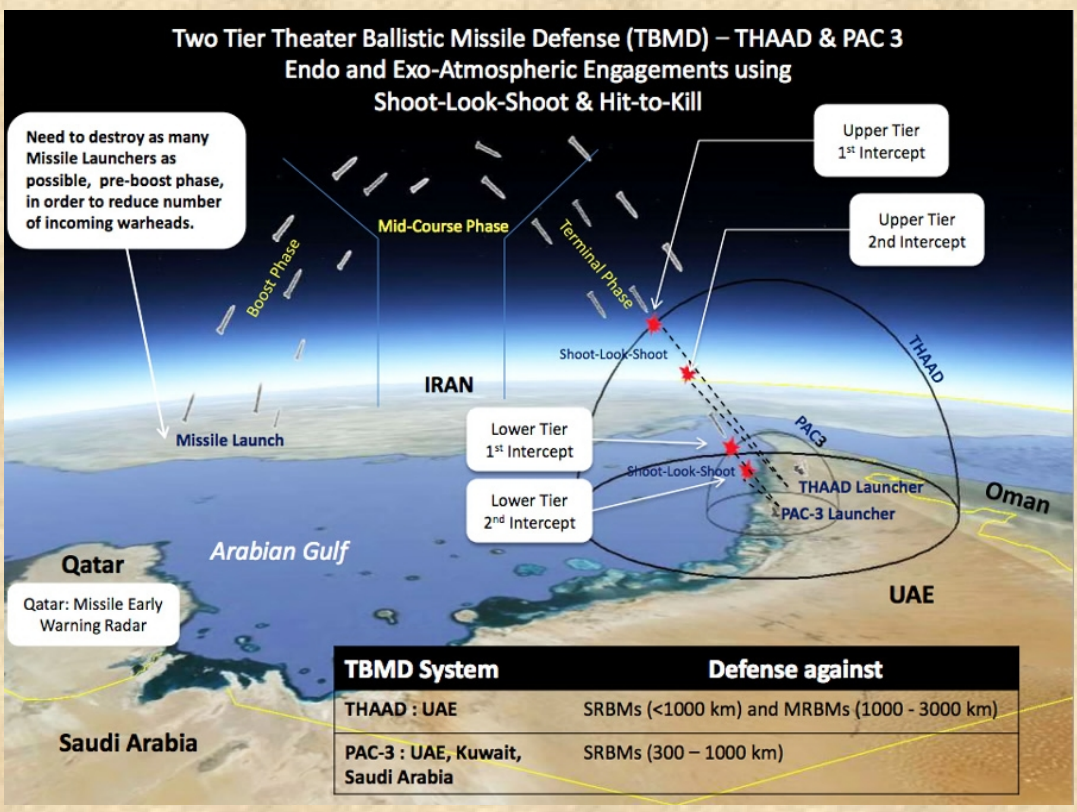
10 B-2 Bombers and at least 16 F-18s would go in after Iran's air defenses were as neutralized as possible



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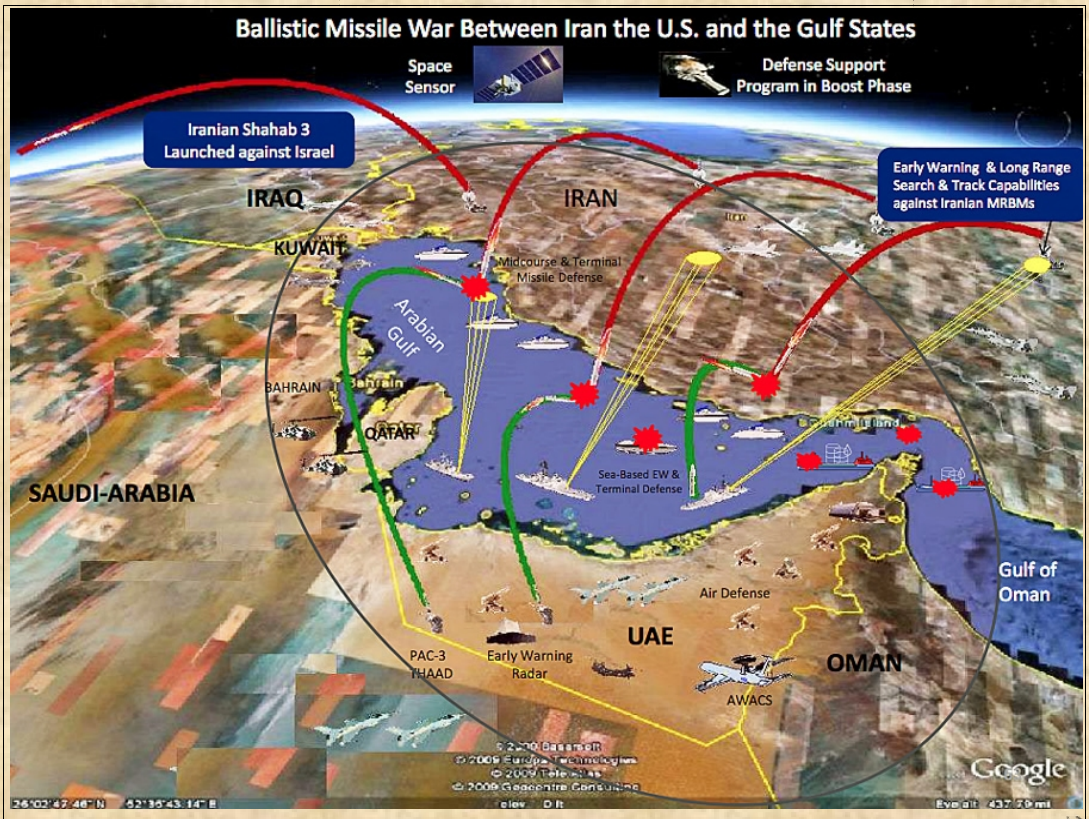
Whatever Iranian launch sites remain will respond in force



CSIS
And if a full-blown missile war begins it could look something like this

After the Strike: Tactics and Strategies of the Iranian Retaliation

By Andrew McGregor
Source: http://www.jamestown.org

Let's begin with the assumption that Israel can overcome the logistical and political hurdles involved in mounting an attack on Iran's nuclear development facilities, either unilaterally or in cooperation with the United States. Unlike earlier strikes on Syrian and Iraqi nuclear facilities, Iran will certainly retaliate for any attack on its soil. Given that both Israel and the United States, individually or in combination, could easily subdue the armed forces available to the Islamic Republic, what forms could Iranian retaliation take?

Rather than play the victim in its dispute with Israel, Iran has taken an aggressive tone in its response to threats of a military strike. On September 19 Iranian Defense Minister Brigadier General Ahmad Vahidi suggested that Israel was trying to cover up domestic problems by pursuing the rhetoric of war, adding that Iran is "able to wipe the [Israeli] regime off the scene" with its defensive capabilities (IRNA September 19; Fars News Agency, September 20). Vahidi and other Iranian leaders have been taking advantage of the annual "Week of Sacred Defense" commemoration of the Islamic Republic's war with Iraq in the 1980s to remind interested parties of Iran's successful eight year defense against the U.S. supported Iraqi regime of Saddam Hussein (Trend.az, September 22). However, such rhetoric is common from Iranian sources; the question remains as to whether Iran can back up its threats of massive retaliation.

The Missile Response

With a direct land-based retaliatory attack on Israel rendered impossible by geography and military considerations, Iran's best chance for a direct blow to Israel lies in the possibility of Iranian long-range ballistic missiles penetrating Israel's Arrow anti-ballistic-missile system and the much-heralded Iron Dome missile defense system. While the latter system has proved effective, its main weakness is its expense and inability to bring down more than a percentage of a mass missile barrage. Bringing down a cheap homemade rocket from Gaza can cost far more than the potential damage the rocket could inflict. Potential opponents of Israel such as Hezbollah now possess enhanced missile capabilities that make strikes on Tel Aviv and other urban centers in Israel a genuine possibility. A barrage of cheaper or smaller rockets from several directions at once might sufficiently tax Israel's air defense systems to allow an Iranian ballistic missile with a conventional or non-conventional warhead to penetrate Israeli defense systems. Besides the surface-to-surface Sejjil missiles and medium-range Shahab-3 ballistic missile with a range of up to 2,000 km, Iran has recently deployed upgraded versions of its twenty-year-old Zelzal rockets, which have a range of 300 km. To prepare for possible missile attacks on Israel a joint U.S.-Israeli missile defense exercise is expected to be held later this fall after the operation was delayed earlier this year (*Financial Times*, September 17). Militants based in Hamas-ruled Gaza, Israel's weakest opponent, continue to fire missiles across the Israeli border despite scores of air raids, assassinations and even a 2009 deterrent raid that killed upwards of 1300 people.

According to Commander of the Islamic Revolutionary Guard Corps (IRGC) Major-General Muhammad-Ali Aziz Jaafari, the U.S. military presence in the region will actually work against them as it brings U.S. military targets within range of Iranian counter-strikes (Tehran Times, September 16). General Jaafari has revealed that Iran does not believe Israel will succeed in persuading the United States to join in an attack on Iran but will nevertheless hold the United States responsible for any strike on its nuclear or military facilities (*al-Sharq al-Awsat*, September 21). Jaafari also remains confident of Iran's ability to carry out effective missile strikes on Israel: "I think nothing will remain of Israel (should it attack Iran). Given Israel's small land area and its vulnerability to a massive volume of Iran's missiles, I don't think any spot in Israel will remain safe" (Fars News Agency, September 16).

Iranian Air Defense

Iran's ancient assembly of obsolete Soviet and American-built warplanes would be quick work for modern Israeli or American aircraft and would therefore be unlikely to be deployed in a conflict with these nations. However, if Israel were to conduct a unilateral attack, their aircraft would experience moments of vulnerability during the mid-air refueling required to get their aircraft to Iranian targets and back. Israel has conducted air exercises designed to counter such threats.

After the recent "successful testing" of Iran's Ra'd air defense system, IRGC Brigadier General Amir Ali Hajizadeh said the system "has been manufactured with the aim of confronting [hostile] U.S. aircraft and can hit targets at a distance of 50 kilometers and at an altitude of 75,000 feet (22,860 meters)" (Tehran Times, September 24). The Iranian-built Ra'd system has not been used in a combat situation and will be subject to countermeasures available to Israeli or American aircraft, but unlike Qaddafi, Iran's military and political leaders are not likely to hesitate to give the order to fire on foreign aircraft in Iranian airspace.

Asymmetric Responses

Attacks on Israeli facilities, institutions or individuals around the world by the IRGC, Iranian sympathizers or even other elements taking advantage of the situation to press their own political agendas would threaten to spread a potential conflict far beyond the Middle East. A covert war between Israel and Iran is already underway and can be easily intensified in the event of open conflict. This represents an open-ended threat that cannot be dealt with simply through the application of overwhelming airpower or incursions by land forces.

In the event of an attack on Iran, Iranian sympathizers and government agents will agitate public opinion in Muslim capitals around the world, fuelling international condemnation of Iran's attackers through violent demonstrations and attacks on Israeli and American institutions. Should such attacks turn bloody through the efforts of security agencies to restore order these disturbances could take on a life of their own, creating security issues and diplomatic crises that would sap public will to pursue a war or create internal political dissent. Recent anti-American demonstrations in the Middle East have demonstrated that regional governments may lack the will or the ability to restrain an anti-Western backlash.

The Naval Response

Most of the Iranian naval response would be in the hands of the smaller missile-equipped boats of the highly-trained and motivated Islamic Revolutionary Guards Corps Navy (IRGCN) rather than the conventional and often outdated ships of the regular Iranian Navy.

Iran's oft-stated intention of closing the Strait of Hormuz to commercial traffic, primarily oil shipments, is no secret. According to General Jaafari: "If a war breaks out where one side is Iran and the other side is the West and the U.S., it's natural that a problem should occur in the Strait of Hormuz. Export of energy will be harmed. It's natural that this will happen" (Fars News Agency, September 16).

Though it is frequently pointed out that Iran would itself suffer greatly by closing the Strait, it is likely that the Iranian command has recognized that in the event of a war Iranian oil could only be shipped with U.S. sufferance. With the United States unlikely to be so generous, the Iranian command may have come to the conclusion it has nothing to lose by closing the Strait, which would at least bring international pressure to bear on finding a quick resolution to the conflict. Domestic support for a U.S. role in the conflict could falter as rapidly rising petroleum prices drive a fragile economy into recession. Of course closing the Strait is not without risk and could incite the entry of the most affected countries (Kuwait, Iraq, Oman and Qatar) into a larger Sunni Arab – Shiite Iranian conflict.

Speedboat attacks could cause a certain amount of mayhem in the narrow confines of the Straits, but are unlikely threaten U.S. naval ships in any significant way. Analogies to the 2000 USS *Cole* attack are meaningless; if the Cole had been on security alert or felt endangered by the skiff approaching its side the smaller craft would have been quickly blown out of the water. With air surveillance support, American warships have ample short-range defenses to deal with aggressive craft should they succeed in coming within attacking range. Rather than attack warships, Iran's fleet of small missile boats would be better employed in attacking civilian shipping in the Gulf. Attacks on oil

tankers in particular would cause economic havoc in the international markets.

In the last few months the United States has doubled the number of minesweepers it maintains in the Gulf, sent a second aircraft carrier to the region two months ahead of schedule and deployed the USS *Ponce*, an amphibious transport dock that can be used as a staging base for Special Forces operations or as a carrier for MH-53 helicopters in a minesweeping role (*Financial Times*, September 17).

A large-scale de-mining exercise, the September 16-27 International Mine Countermeasures Exercise (IMCMEX), involving ships from the United States, Britain, Japan, France, Jordan, Yemen and other nations was designed to test a variety of anti-mine techniques to address the Iranian threat to close the vital Strait of Hormuz with fixed or floating mines (*Hurriyet*, September 17). General Jaafari downplayed the significance of the exercise (at least in public), describing it as "defensive" in nature: "We don't perceive any threats from it" (Reuters, September 17).

Soft Warfare

Iran's response will not be limited to military activities. An important part of its strategic planning is dedicated to Iran's "Soft War" concept, which describes an alternative form of warfare that, in the hands of Iran's enemies, is dedicated to eroding the legitimacy of the Islamic republic by changing the cultural and Islamic identity of Iranian society. To handle Iran's response to such attacks, a special "Unit of the Soft War" (Setad-e Jang-e Narm) was created in 2011 as a branch of the Basiji militia. Iranian Soft War counter-measures include propaganda, education, media manipulation and the management of electronic information access (for a full description of the "Soft War" concept, see Terrorism Monitor, June 12, 2010). General Jaafari remarked in early September that soft warfare was more dangerous than conventional warfare and urged university and seminary students and faculty to prepare to deal with the soft warfare strategy employed by Iran's enemies (Tehran Times, September 2).

Social Networking may provide a unique and innovative way of organizing hundreds or even thousands of points of simultaneous resistance to an attack on Iran in a variety of forms ranging from public demonstrations to civil resistance to armed activities or terrorist attacks. The drawn-out nature of the dispute over Iran's nuclear capabilities and intent has allowed Iran's global intelligence network to prepare a broad "soft warfare" response to any attack.

Border Defense

In the event of land-based incursions into Iran, the Deputy Commander of the Iranian Army, Brigadier General Abdolrahim Mousavi, has promised Iran's borders will be defended by a combination of the regular Iranian Army, the IRGC and the Basiji Force (a lightly-armed but highly motivated militia) (Press TV, September 23).

Iran enhanced its border defenses in March with the introduction of the *Shaparak* (Butterfly) unmanned aerial vehicle (UAV), though the drone has an operational radius of only 31 miles and a flight time of three and a half hours. Since then Iran has added the Shaed-129, which can remain in the air for 24 hours and deliver strikes with its *Sadid* missiles (Fars News Agency, September 16). The most important drone in the Iranian arsenal is the *Karrar* (Striker), a turbojet-powered drone capable of long-range reconnaissance and attack missions with a flight range of 1,000 km at low or high altitudes. The four-meter long drone can be deployed on the back of a truck to a ground-launch position where it can be fired with the aid of a jet-fuelled take-off system (see Terrorism Monitor Brief, November 25, 2010; *Ressalat* [Tehran], August 23, 2010; *Vatan-e Emrooz* [Tehran], August 23, 2010).

Possible Foreign Support for Iran

In observing the current North American coverage of the approaching crisis it is easy to assume that the whole world, or most of it, is resolutely opposed to Iran. This, however, is not the case, as shown by the 120 nations that attended the Non-Aligned Movement conference held in early September in Tehran despite calls from Western nations for a boycott. Iran is aware of the political value even a defeat could have for the Islamic Republic in the international arena. As suggested in a feature carried by Iran's state-owned Press TV: "In the impossible event that all goes well for Israel on the battlefield, the suffering of the people of Iran would probably shame the world into turning against Zionism even more sharply than the

world turned against apartheid in the 1980s" (Press TV, September 21).

In the state of heightened tension and trepidation that would follow an Israeli attack, incidents that might otherwise be dealt with at an appropriate level could easily precipitate a chain of events leading to the entry of other nations or militant groups into a wider war. Following a series of international incidents, Turkey's ruling AKP government has gone from shifted from being Israel's military ally to an increasingly hostile neighbor. Ankara is seriously disturbed by Iran's role in Syria and demonstrated its dissatisfaction by recently keeping Iran's national security chief cooling his heels for half an hour prior to a meeting in the office of Turkish Prime Minister Recep Tayyip Erdogan. Nevertheless, in the unpredictable environment that would emerge from an Israeli attack on Iran it is entirely possible that some incident could drag Turkey into a larger war, whether as a result of a government decision, national security concerns or popular pressure. While Israel displays little respect for the militaries of Iran or the Arab world, Turkey's powerful, well-trained, well-armed and battle-experienced armed forces are another matter. Certainly, as a NATO member, an entry into the conflict by Turkey could immeasurably complicate the entire situation.

With a large Palestinian population and a growing Islamist movement, Jordan represents another Israeli neighbor that might find itself hard-pressed to resist popular pressure to retaliate in some form if Israel attacks Iran, possibly by annulling its peace treaty with Israel. Jordan is pursuing its own nuclear power program, which is much needed as a dependable replacement for unreliable natural gas supplies from Egypt and to fuel desalinization plants required to provide the arid nation with water. Jordan's King Abdullah II recently complained that: "strong opposition to Jordan's nuclear energy program is coming from Israel… When we started going down the road of nuclear energy for peaceful purposes, we approached some highly responsible countries to work with us. And pretty soon we realized that Israel was putting pressure on those countries to disrupt any cooperation with us" (AFP, September 12).

So long as the volatility in Syria and the Sinai continues, there is ample opportunity for unintentional clashes or planned provocations to light the charge for a wider conflict. Under Egypt's new Muslim Brotherhood government there is daily discussion of revising or even abandoning Egypt's three-decade-old peace treaty with Israel. If Israel became entangled in battling Gaza militants or dealing with a new Palestinian *intifada* in the West Bank there would be enormous pressure both on the street and in the halls of government for Egypt to provide a military response. Hezbollah's success in the 2006 summer war changed attitudes in the Middle East. The once-common perception of an invincible Israel with unlimited military and logistical support from the world's largest superpower has not existed since Israel's failed effort to destroy Hezbollah, which not only repulsed the Israeli Defense Force (IDF), but did so without even having to call up its reserves. While Israel has worked hard to revise its battlefield tactics and took advantage of its 2009 incursion into Gaza to field-test them in what amounted to a massive live-fire exercise considering the lack of resistance encountered, the IDF has lost much of its ability to intimidate the Arab opposition. The ascendance of the Muslim Brothers in Egypt has also been a game-changer; no longer can Israel expect the silence of a corrupt and self-indulgent regime fattening itself on American aid. Today there is a growing assumption in Egypt that billions of dollars in American military aid will not last much longer, paired with a recognition that Egypt must develop its own arms industry if it is to pursue an independent foreign policy.

Disaffected Shiite populations in eastern Saudi Arabia and Bahrain, while not necessarily following directives from Tehran, could still take advantage of a collapsing security situation to press their demands for economic and political reforms. Such instability in Bahrain would not prevent operations by the U.S. Sixth Fleet based there, but would prove politically embarrassing at an extremely sensitive time. If violence can sweep the Muslim world because of the actions of Florida Quran burners and Californian immigrant film-makers, imagine the violence that would follow a carefully manufactured false-flag operation or other provocation designed to draw various countries or populations into a new Middle East conflict.

Conclusion

Despite the Middle East's vast energy resources, reserves are declining in some areas and have nearly expired in others. Some major nations, like Egypt and Iraq, are largely or partially reliant on hydro-electric power that is threatened by huge new dams being built further upstream in Ethiopia and Turkey respectively. With even oil-rich Saudi Arabia intent on expanding its nuclear power capabilities before the oil runs out, it is clear that the future of the Middle East is nuclear. In these circumstances it would be impossible for Israel to continue a policy of pre-emptive strikes on potentially hostile neighbors to prevent the possibility of nuclear weapons development. Without the emergence of alternative energy supplies, even the deterrent effect of a successful Israeli strike on Iran will be short-lived in the region.

Iran has consistently exaggerated its military capability and the effectiveness of its weapons, so much of its rhetoric concerning its ability to retaliate to an Israeli or American attack must be taken with a grain of salt. In addition, much of the conventional response outlined above is subject to the operational survival of Iranian weapons systems to a unilateral or joint Israeli/U.S. strike, which would target Iranian missile silos and electrical systems nation-wide. Cyber-attacks could also be expected to destroy Iran's ability to respond with sophisticated hardware or weapons. With these considerations it becomes clear that Iran's most effective response will lie in the areas of asymmetric warfare and economic disruption. In the complicated world of the Middle East, Iran could still organize a broad retaliatory response that would effectively prevent an Iranian military defeat from translating into an Israeli victory.

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DHS Admits It Is Unprepared for EMP Threat

By Steven Ballew

Source: http://blog.heritage.org/2012/10/02/dhs-admits-it-is-unprepared-for-emp-threat/

In testimony delivered on September 12, Brandon Wales, director of the Department of Homeland Security's (DHS) Infrastructure Threat and Risk Analysis Center, admitted that DHS remains unprepared for the possibility of an electromagnetic pulse (EMP) event or attack.

Wales testified that the nation's power grid is more vulnerable now than it was a few years ago. Nevertheless, he could not provide Congress with an estimate for how much it would cost to combat such vulnerabilities.

An EMP attack could bring this country to a screeching halt by permanently disabling electronic devices. ATMs would stop dispensing money. Water and sewage systems would fail. Even planes and automobiles would stop working. Imagine living in the Dark Ages: This is what it would be like to live through an EMP attack.

More than seven years ago, DHS released its National Planning Scenarios. This document outlined plans to prepare for and respond to 15 different man-made and natural disasters. The list included the detonation of an improvised nuclear device and the use of a plague as a weapon. However, one potential threat was noticeably missing; an EMP event or attack.

The possibility of an EMP is arguably just as likely to occur as the detonation of an improvised nuclear device or the use of a contagious and deadly biological weapon. A rouge nation could effectively disable, damage, or destroy critical infrastructure with a short-range ballistic missile carrying an EMP device or nuclear warhead. Countries such as North Korea and Iran already possess ballistic missile capabilities. Other weapons, such as a radio-frequency device, could also cause an EMP that would disrupt critical systems.

Natural events could also plausibly result in an EMP. NASA and the National Academy of Sciences have argued that a "solar maximum" could occur between now and 2014. As the solar maximum approaches its peak, the sun could propel electromagnetic fluctuations into the earth's atmosphere. These fluctuations would interact with our electrical systems and result in blackouts affecting 130 million people. Costs of such outages could range from $1 trillion to $2 trillion in the first year alone.

To make matters worse, an outage could last for years, because we would need to completely rebuild our infrastructure. In this scenario, food and water delivery systems would be devastated. We could see massive human casualties on a scale that hardly seems imaginable.

The United States is vulnerable to an EMP that could occur at the hands of our enemies or via uncontrollable natural forces. DHS is ignoring the threat posed by an EMP at the risk of literally plunging us into darkness.

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Declassified U.S. Nuclear Test Film #55

Source: http://www.youtube.com/watch?feature=player_embedded&v=wA8z94MXo9M

Personnel examining the effects of a nuclear detonation just after the explosion…

How to create a lake with an Atomic Bomb

Source: http://www.youtube.com/watch?feature=player_embedded&v=UoDd8Fm-FiI

U.S. think tank: Iran could produce a nuclear warhead within 2-4 months

Source:http://www.haaretz.com/news/middle-east/u-s-think-tank-iran-could-produce-a-nuclear-warhead-within-2-4-months-1.468741

Iran now could produce enough weapons-grade uranium to arm a nuclear bomb within two to four months but would still face serious "engineering challenges" — and much longer delays — before it would be able to use the material in an atomic warhead, a respected U.S. think tank said Monday.

While Iran denies any interest in possessing nuclear arms, the international community fears it may turn its peaceful uranium enrichment program toward weapons making — a concern that is growing as Tehran expands the number of machines it uses to enrich as well as its stockpile of enriched uranium. And as apprehension increases, so does anxiety that Israel will make good on threats to attack Iran's nuclear facilities before that nation reaches the bomb-making threshold.

In a strident call for an internationally drawn "red line" on what he said was Iran's move toward nuclear arms, Israeli Prime Minister Benjamin Netanyahu said Sept. 28 the world has until next summer at the latest to stop Tehran before it can build an atomic bomb. Flashing a diagram of a cartoon-like bomb before the UN General Assembly, he said Iran was ready to move to the "final stage" of making such a weapon by then.

For now, U.S. military and intelligence officials say they don't believe Iran's leadership has made the decision to build a bomb, while also warning that the country is moving closer to the ability to do so.

The Institute for Science and International Security did not make a judgment on whether Iran plans to turn its enrichment capabilities toward weapons making. But in its report made available to The Associated Press ahead of publication Monday, it drew a clear distinction between Tehran's ability to make the fissile core of warhead by producing 25 kilograms (55 pounds) weapons-grade uranium from its lower enriched stockpiles and the warhead itself.

"Despite work it may have done in the past," Iran would need "many additional months to manufacture a nuclear device suitable for underground testing and even longer to make a reliable warhead for a ballistic missile," the report said.

Tehran, making low-level material. Additionally it has about 800 machines turning out 20-percent enriched uranium at Fordow, a bunkered structure fortified against air attack near the holy city of Qom, as well as about 2,000 more installed but not yet running.

The Fordow nuclear facility under construction inside a mountain located about 20 miles north northeast of Qom, Iran. Photo by AP

Additionally, ISIS — which often advises Congress and other branches of U.S. government on Iran's nuclear program — said any attempt to "break out" into weapons-grade uranium enrichment would be quickly detected by the United States and the International Atomic Energy, which monitors Tehran's known enrichment sites. With Washington likely to "respond forcefully to any "break-out" attempt, Iran is unlikely to take such a risk "during the next year or so," said the report.

Still, the report suggested a narrowing window as Iran positions itself to increase enrichment.

Iran now has more than 10,000 centrifuges enriching uranium at its main plant at Natanz, about 225 kilometers (140 miles) southeast of

Uranium enriched to 20 percent can be turned into weapons-grade material much more quickly than low-enriched uranium. If the centrifuges at Fordow that now are idle also start operating and are used to make 20 percent material, Iran — using its total enrichment output of low and higher grade uranium — could produce enough weapons grade uranium for a warhead within three or four weeks, said the summary.

Olli Heinonen, who stepped down as the IAEA's deputy director general in charge of the Iran file in 2010, said the ISIS report contained "good and technically sound estimates."

He said Fordow will nearly double its production capacity of 20 percent enriched uranium to up to 30 kilograms (more than 60 pounds) a month, if an when all machines there are operating.

Iran's Nuclear Timetable

Updated September 6, 2012

Source: http://www.iranwatch.org/ourpubs/articles/iranucleartimetable.html

Iran's bank of rapidly spinning centrifuges has produced a growing stockpile of low-enriched uranium, able to fuel nuclear reactors, but able also to fuel nuclear weapons if further enriched.

Enrichment raises the concentration of the uranium isotope U-235, which fissions in first-generation nuclear weapons.

Based on the amount of low-enriched uranium Iran has stockpiled, and the amount it is believed to be producing each month, the Wisconsin Project estimates that by mid-August, Iran had accumulated enough uranium hexafluoride (UF6) enriched to 3.5 percent U-235 to fuel five nuclear weapons -- assuming Iran decided to further enrich the low-enriched material to weapon-grade (90 percent or more U-235) and process the material into a form suitable for use in a weapon. This estimate accounts for the fact that Iran has been converting some of its low-enriched uranium to research reactor-grade (just under 20 percent U-235). Similarly, Iran has converted about half of the 190 kg of 20 percent enriched UF6 it has produced through mid-August 2012 into fuel assemblies.

As Iran increases its stockpile of low-enriched uranium, and in particular its stockpile of research reactor-grade uranium, it will consolidate its status as a "virtual" nuclear weapon state.

Iran's progress towards this status is estimated a below. These estimates are based upon the theoretical performance of Iran's existing centrifuges and upon how these centrifuges appear to have performed in the past:

Bomb potential of Iran's low-enriched uranium stockpile

- Amount of uranium hexafluoride (UF6) enriched to 3.5 percent U-235 produced through early August 2012: 6,878 kg b
- Amount of this material on hand as of August 2012: 5,310 kg c
- Average daily production rate of this low-enriched UF6 at the Natanz Fuel Enrichment Plant: 6.8 kg d
- Amount of this low-enriched UF6 needed to produce a bomb's worth of weapon-grade uranium metal: 1,053 kg e
- Number of separative work units (SWUs)f needed to accomplish the above: 955 g
- Number of first-generation implosion bombs this low-enriched uranium stockpile could fuel, if further enriched: 5 h
- Time needed to convert this low-enriched uranium to one bomb's worth of finished uranium metal enriched to 90 percent U-235: 3 - 12 months i
- Date by which Iran's low-enriched uranium stockpile probably was sufficient to fuel one first-generation implosion bomb, if further enriched: February 2009 j
- Approximate number of first generation IR-1 centrifuges being fed with UF6 at the Natanz Fuel Enrichment Plant, as of the last reported visit by IAEA inspectors: 9,156 k
- Average number of SWUs each centrifuge appears to be producing: .77 l
- Number of months theoretically needed for these 9,156 centrifuges operating at such a capacity to produce the 955 SWUs theoretically needed to produce weapon-grade fuel for one bomb: 1.6 m
- Number of additional centrifuges installed or being instaled at the Natanz Fuel Enrichment Plant as of the last reported visit by IAEA inspectors: 6,000 n

Bomb potential of Iran's research reactor-grade uranium stockpile

- Amount of uranium hexafluoride (UF6) enriched up to research reactor grade (approximately 20 percent U-235) produced through August 2012: 189.4 kg o
- Approximate amount of this material on hand as of mid-August 2012: 91.4 kg p
- Amount of this 20 percent enriched UF6 theoretically needed to produce a bomb's worth of weapon-grade uranium metal: 140 kg q
- Average monthly production rate of this 20 percent enriched UF6 at the Natanz pilot plant: 4.5 kg r
- Number of first generation IR-1 centrifuges being fed with UF6 at the Natanz pilot plant as of the last reported visit by IAEA inspectors: 328 s
- Average monthly production rate of this 20 percent enriched UF6 at the Fordow plant since the last IAEA report: 9.9 t
- Number of first generation IR-1 centrifuges being fed with this UF6 at the Fordow fuel enrichment plant as of the last reported visit by IAEA inspectors: 696 u
- Number of additional first generation IR-1 centrifuges installed at Fordow as of the last reported visit by IAEA inspectors: 1,444 v
- Number of SWUs needed to accomplish the enrichment of a bomb's worth of this 20 percent enriched UF6 to weapon-grade: 292 w

- Number of months theoretically needed for the 696 IR-1 centrifuges operating at Fordow to accomplish the above: 6.5 x
- Number of months theoretically needed to accomplish the enrichment to weapon-grade if the number of centrifuges devoted to production at Fordow were: doubled: 3.3 months tripled: 2.2 months quadrupled: 1.6 months y
- Date by which this quadrupling of centrifuges may occur: November 2012 z

Number of centrifuges deployed over time at the Natanz Fuel Enrichment Plant

Date of IAEA inventory	Centrifuges being fed with UF6	Other centrifuges (installed or being installed)
2/17/2007	0	656
5/13/2007	1,312	820
8/19/2007	1,968	656
11/3/2007	2,952	0
12/12/2007	2,952	?
5/7/2008	3,280	2,624
8/30/2008	3,772	2,132
11/7/2008	3,772	2,132
2/1/2009	3,936	1,968
6/1/2009	4,920	2.296
8/12/2009	4,592	3,716
11/2/2009	3,936	4,920
1/31/2010	3,772	4,838
5/24/2010	3,936	4,592
8/28/2010	3,772	5,084
11/5/2010	4,816	3,610
11/16/2010	0	~ 8,426
11/22/2010	~ 4,592	~ 3,834
2/20/2011	~ 5,184	~ 2,816
5/14/2011	~ 5,860	~ 2,140
8/28/2011	~ 5,860	~ 2,140
11/2/2011	~ 6,208	~ 1,792
2/19/2012	8,808	348
5/19/2012	8,818	512
8/21/2012	9,156	~ 6,000

Comments

- This assessment assumes that Iran would use 16 kg of weapon-grade uranium (~90 percent U-235) in the finished core of each nuclear weapon. Sixteen kilograms are assumed to be sufficient for an implosion bomb. This was the amount called for in the implosion device Saddam Hussein was trying to perfect in the 1980's, and the design for such a device has circulated on the nuclear black market, to which Iran has had access. Some experts believe that Iran could use less material, assuming Iran would accept a lower yield for each weapon. According to these experts, Iran could use as few as seven kilograms of this material if Iran's weapon developers possessed a "medium" level of skill, and if Iran were satisfied with an explosive yield

slightly less than that of the bomb dropped on Hiroshima, Japan. aa If Iran chose to use an amount smaller than 16 kg, the time required to make each weapon would be less than estimated here. Or, in the amount of time estimated here, Iran could make a greater number of weapons. Iran could decide not to use such a smaller amount of weapon-grade uranium if Iran wanted to have more confidence that its weapons would work, or if it wanted to reduce the size of its weapons by reducing the amount of high explosive required.

- Uncertainties about the number of centrifuges that Iran is operating make it difficult to draw a conclusion about the performance of individual machines. An increase or decrease in the production rate could be attributed to the fact that more machines were operating when IAEA inspectors were not present at the plant, rather than because the machines were operating more efficiently.
- Following start-up, centrifuge cascades must be operated for a time without product withdrawal. This process is called passivation.

NOTES

(a) The following estimates are based on information in quarterly reports by the International Atomic Energy Agency (IAEA), which is responsible for nuclear inspections in Iran.

(b) According to the IAEA, Iran had an inventory of 4,871 kg of low-enriched UF6 as of October 16, 2011, based on production from the beginning of operations in February 2007. Iran estimates that it produced a further 2,005 kg of this material between October 17, 2011 and August 6, 2012, for a total stockpile of 6,876 kg (http://www.iranwatch.org/international/IAEA/iaea-iranreport-083012.pdf).

(c) According to the IAEA, Iran has used some of its stockpiled low-enriched UF6 (1,566.8 kg) for the production of 20% enriched uranium gas. Therefore, Iran had approximately 5,309.2 kg of low-enriched UF6 left as of August 2012 (http://www.iranwatch.org/international/IAEA/iaea-iranreport-083012.pdf).

(d) Iran estimates that it produced 2,005 kg of low-enriched UF6 over 295 days, from October 17, 2011 to August 6, 2012, for an average daily production rate of 6.8 kg (http://www.iranwatch.org/international/IAEA/iaea-iranreport-083012.pdf).

(e) This is assuming uranium tails of 1% U-235, a feed assay of 3.5% U-235, a product assay of 90% U-235, a 20% loss of material during processing, and that 16 kg of finished uranium metal enriched to 90% are needed for a bomb. See the SWU calculator published by URENCO, a European uranium enrichment consortium: web.archive.org/web/20021226100607/www.urenco.de/trennarbeit/swucal_e.html.

(f) The Separative Work Unit is the standard measure of the effort required to increase the concentration of the fissionable U-235 isotope. See www.urenco.com/Content/89/Glossary.aspx.

(g) Based on the assumptions set forth above (see note d), Iran would need approximately 955 SWUs to bring 1,053 kg of low-enriched UF6 to weapon grade. See the SWU calculator published by URENCO, a European uranium enrichment consortium: web.archive.org/web/20021226100607/www.urenco.de/trennarbeit/swucal_e.html.

(h) If 1,053 kg of low-enriched uranium are required to produce a bomb's worth of weapon-grade uranium (see note e), the 5,310 kg of low-enriched uranium in Iran's stockpile as of August 2012 might be sufficient to fuel at about five first-generation implosion bombs. This number takes into account the conversion of about one fifth of Iran's low-enriched UF6 stockpile to 20% enriched uranium gas.

(i) The IAEA estimates the conversion time for low-enriched uranium to weapon-grade uranium metal to be approximately 3-12 months (www-pub.iaea.org/MTCD/publications/PDF/nvs-3-cd/PDF/NVS3_prn.pdf).

(j) According to the IAEA, Iran had produced about 1,010 kg of low-enriched UF6 by late January 2009. Given the average daily production rate of this material at the time, Iran's stockpile probably contained the requisite 1,053 kg by the following month. (http://www.iranwatch.org/international/IAEA/iaea-iranreport-021909.pdf)

(k)As of August 21, 2012, Iran claimed to be operating 54 cascades (9,156 centrifuges) in Production Hall A of the Natanz Fuel Enrichment Plant (http://www.iranwatch.org/international/IAEA/iaea-iranreport-083012.pdf).

(l) Iran's IR-1 centrifuge is estimated to have an annual enrichment capacity of about 2 SWU. Iran, however, has been achieving a lower ouput. For instance, between October 2010 and October 2011, during which time Iran is estimated to have been operating between 4,800 and 6,200 machines (for an average of 5,500), an estimated 1,736 kg of low-enriched UF6 were produced. Assuming a product assay of 3.5% U-235 and tails of .4% U-235, this amounts to about 4,268 SWUs over one year, or about .77 SWU per machine.

(m) If each of Iran's 9,156 centrifuges produces an average of .77 SWUs per year, their total output over one year would be 7,050 SWUs, or 588 SWUs per month. Thus, it would take just over 1.6 months to produce 955 SWUs.

(n) According to the IAEA, as of August 21, 2012, Iran had installed the following in Production Hall A of the Natanz Fuel Enrichment Plant: 18 cascades with empty centrifuges casings in Unit 25, 15 cascades with empty centrifuge casings in Unit A27, and two additional cascades in that Unit that are either fully

or partially installed. One cascade in Unit A27 is empty (http://www.iranwatch.org/international/IAEA/iaea-iranreport-083012.pdf).
(o) Iran is producing 20% enriched UF6 at both its Natanz pilot plant and its Fordow enrichment plant, allegedly for the purpose of fueling the Tehran Research Reactor. The IAEA has verified that Iran produced 73.7 kg of this material between February 9, 2010 and September 13, 2011. Since then, Iran has produced an estimated 50.4 kg of 20% enriched UF6 at Natanz (through August 21, 2012) and an estimated 65.3 kg at Fordow (through August 12, 2012), for a total of 189.4 kg (http://www.iranwatch.org/international/IAEA/iaea-iranreport-083012.pdf).
(p) According to the IAEA, Iran converted some of this material (97.9 kg), including to produce reactor fuel . Therefore, Iran had 91.4 kg of 20% enriched UF6 left by mid-August 2012.
(q) This is assuming uranium tails of 1% U-235, a feed assay of 19.75% U-235, a product assay of 90% U-235, a 20% loss of material during processing, and that 16 kg of finished uranium metal enriched to 90% are needed for a bomb core. See the SWU calculator published by URENCO, a European uranium enrichment consortium: web.archive.org/web/20021226100607/www.urenco.de/trennarbeit/swucal_e.html.
(r) Between September 14, 2011 and August 21, 2012, Iran estimates that it produced 50.4 kg of 20% enriched UF6, for an average monthly production rate of 4.5 kg.
(s) Since July 2010, Iran has been enriching uranium in two interconnected cascades of 164 centrifuges each (328 machines) at the Natanz pilot plant.
(t) Between May 13, 2012 and August 12, 2012, Iran estimates that its total amount of 20% enriched UF6 increased from 35.5 kg to 65.3 kg, indicating that it produced approximately 29.8 kg during that three-month time span, for an average monthly production rate of 9.9 kg. This marks an increase in the production rate at the plant since earlier this year. The IAEA reported in May 2012 that Iran produced an estimated 21.7 kg of 20% enriched UF6 during the three-month period between February 11, 2012 to May 13, 2012, for an average monthly production rate of 7.2 kg.
(u) Since mid-December 2011, Iran has been enriching uranium in two interconnected cascades of 174 centrifuges each (348 machines) at the Fordow plant. Iran began enriching uranium in two additional cascades of 174 centrifuges each in late January 2012 (http://www.iranwatch.org/iaea-iranreport-052512.pdf).
(v) As of August 18, 2012, in addition to the centrifuges enriching uranium Iran had installed eight cascades of 174 centrifuges each and one cascade with 52 centrifuges (http://www.iranwatch.org/international/IAEA/iaea-iranreport-083012.pdf).
(w) Based on the assumptions set forth above (see note q), Iran would need approximately 292 SWUs to bring 140 kg of 20% enriched UF6 to weapon grade. See the SWU calculator published by URENCO, a European uranium enrichment consortium: web.archive.org/web/20021226100607/www.urenco.de/trennarbeit/swucal_e.html.
(x) If 292 SWUs are needed to bring a bomb's worth of 20% enriched UF6 to weapon-grade, and if the 696 IR-1 centrifuges in Iran's Fordow enrichment plant were to achieve the same average production rate as those in the main enrichment plant at Natanz (.77 SWU per machine), then it would take less than seven months to achieve 292 SWUs at the Fordow plant.
(y) If 292 SWUs are needed to bring a bomb's worth of 20% enriched UF6 to weapon-grade, and if Iran's centrifuges at Fordow were to produce approximately 1,072 SWUs per year, or 89 SWUs per month, then it would take about 3.3 months to achieve 292 SWUs; if Iran's centrifuges were able to produce 1,608 SWUs per year, or 134 SWUs per month, then it would take 2.2 months to achieve 292 SWUs; if Iran's centrifuges were able to produce approximately 2,144 SWUs per year, or 179 SWUs per month, then it would take 1.6 months to achieve 292 SWUs. The above calculations assume that the each centrifuge would achieve the same average production rate as those in the main enrichment plant at Natanz (.77 SWUs).
(z) Iran completed the installation of about 1,000 centrifuges since May 2012. To fully outfit the Fordow plant, a further 644 centrifuges must be installed. Based on Iran's past installation rate, the plant could be fully outfitted by November 2012.
(aa) Thomas B. Cochran and Christopher E. Paine, "The Amount of Plutonium and Highly Enriched Uranium Needed for Pure Fission Nuclear Weapons," (Washington, DC: Natural Resources Defense Council, revised April 13, 1995).

Fed sees EMP as a threat to power infrastructure, but can't figure out how to prevent it

Source:http://www.zdnet.com/fed-sees-emp-as-a-threat-to-power-infrastructure-but-cant-figure-out-how-to-prevent-it-7000005709/

While we often worry about maintaining power to our datacenters and plan for the potential impact of power outages and how we will deal with them almost all the plans made by datacenter operators deal with short term power failures. Long-term

outages usually fall under the aegis of our disaster recovery / business continuity planning, but even that level of organization operates under the expectation that the national power grid will remain intact.

The Federal Regulatory Energy Commission (FERC) has, since the establishment of the regulatory oversight explained in the Energy Policy Act of 2005, been the agency responsible for the protection of the delivery of reliable bulk energy in the US. This means primarily the backbone of energy providers; they are not tasked with oversight of regional providers.

In a somewhat convoluted process, FERC has designate another group, the North American Electric Reliability Corporation (NERC) to review, propose and approve new and existing standards with the goal of improving the reliability and protecting the bulk power systems within the continental US. They are not responsible for Alaska or Hawaii.

Last month, Joseph McClellan, the director of the Office of Electric Reliability of the FERC testified before congress to point out the limitations of federal policy on maintaining the reliability and availability of the nation's electric backbone in a time when external threats are a potential problem. You can download the transcript of his testimony here.

He basically makes two points; the first is that while the current procedures and processes in place for the government and FERC to provide direction on how to meet their mandated requirements are suitable for long-term planning, they are basically useless if there is a need for a quick reaction to ongoing events.

The second is the lack of any real process in place to handle physical threats to reliability of the bulk electric providers, with specific attention to the potential damage that can be caused by EMP. He makes it quite clear that while the danger of EMP damage is a real one, and that this has been known to the government for at least a decade, that there has been little to no activity on how to address this physical threat beyond additional reports and studies identifying EMP as a potential problem. And in a typical government catch-22, they FERC can identify the problem but is limited by the scope of their authority and cannot promulgate standards for addressing this very real issue.

With more than 20 years of published writings about technology, as well as industry stints as everything from a database developer to CTO, ***David Chernicoff*** *has earned the term "veteran" in the technology world.*

An electromagnetic pulse attack — the 'other' Iranian nuclear threat

Source: http://www.timesofisrael.com/an-electro-magnetic-pulse-attack-the-other-iranian-nuclear-threat/

Just what might happen if the Iranians got their hands on a nuclear weapon? Would they fire it at an Israeli city, causing tens or hundreds of thousands of casualties? Or would they use it as a geopolitical weapon, seeking to dominate the Middle East and forcing the hand of Western powers, either subtly or by overtly threatening death and destruction to those who fail to heed their dictates?

While political scientists and world leaders have debated the likelihood of those two possibilities, there is a third plausible scenario: The use of a nuclear weapon by Iran to carry out an electromagnetic pulse (EMP) attack against Israel, the US, or Europe. Such an attack could cause severe damage to the electrical grid in the targeted nations, to the extent that the routines of daily life — centered around the use of electrical power — could be halted, for a short or even long period of time.

An EMP is an above-atmosphere level detonation of a nuclear device that produces enough radiation to wreak havoc with electrical systems. The blast produces a very brief but intense electromagnetic field that can quickly induce very high currents in electrical devices, shorting them out. The stronger the electromagnetic field — the "pulse" — the stronger the current, and the more likely electrical devices are to "blow out." It's akin to a power surge that shorts out your refrigerator or TV when too much voltage surges through the electrical outlet… on a whole other scale.

While there is much speculation as to what exactly an EMP would do to

electrical appliances and digital devices — scientists have differences of opinion over how badly they would be affected (the world hasn't really experienced a direct EMP blast yet, so much of the speculation is based on educated guesses) — the far-greater concern is what an attack would do to the electrical infrastructure in a targeted area. If an EMP strike is large enough, or there are enough such strikes, the blasts could knock out power plants, electrical substations, and other sensitive equipment, causing a massive power failure that may take weeks or months to overcome. Data centers housing servers would likely be badly damaged as well, as would be communications systems.

The EMP issue is hardly being discussed in Israel, said Dr. Emily Landau, director of the Arms Control and Regional Security Program at Israel's Institute for National Security Studies and a lecturer at Tel Aviv University. "There isn't much discussion of it right now, but when the discussion does begin, there is no doubt that it will focus on the balance between how much it will cost to deal with, versus how likely such an attack may be," she said.

Landau, an expert on Iran's nuclear program, believes that Iran could very well be planning an EMP attack on Israel, based on statements the Iranian regime has made, and actions it has taken. And, she said, Iran would be capable of delivering an EMP attack if it acquired a nuclear weapon.

"Some are skeptical that Iran would use a nuclear bomb just for an EMP attack," said Landau. "If they already have a nuclear weapon, why not use it for the main purpose for which it was designed? But while a nuclear bomb targeting an Israeli city would cause mass destruction on a local or regional basis, an EMP attack could cause even more lasting damage, destroying Israel's electrical grid."

If Iran did opt for an EMP attack, the damage to Israel would be very high, she said. "Iran doesn't have a nuclear bomb yet, and hopefully they won't have one, but if they do manage to build a bomb, an EMP attack is a real possibility," Landau added. "Many people in the US are concerned about EMP now, and although the public discussion hasn't begun in Israel yet, I expect that it will in the near future."

The US Congress in 2000 established the Congressional Commission to Assess the Threat to the United States from Electromagnetic Pulse (EMP) Attack. In 2004, the committee produced a 70-page executive summary on the EMP threat, and it issued a final report on the matter in 2008. According to the report, "several potential adversaries have or can acquire the capability to attack the United States with a high-altitude nuclear weapon-generated electromagnetic pulse (EMP). A determined adversary can achieve an EMP attack capability without having a high level of sophistication."

The impact would be devastating, the report said. "EMP is one of a small number of threats that can hold our society at risk of catastrophic consequences. EMP will cover the wide geographic region within line of sight to the

nuclear weapon. It has the capability to produce significant damage to critical infrastructures and thus to the very fabric of US society, as well as to the ability of the United States and Western nations to project influence and military power," it said.

Dr. Peter Vincent Pry was lead staffer for the Congressional committee, and he, too, is worried that Iran could use a nuclear bomb to carry out an EMP attack — on Israel and/or the US.

"Iran openly talks about using an EMP to attack Israel or the US," said Pry, who is currently executive director of the Task Force on National and Homeland Security, a privately funded US group that seeks to educate the public and government leaders about the EMP threat to the US. According to Pry, Iran is actively preparing for an EMP attack. "Tehran has undertaken offshore exercises using Scud missiles fired and positioned in such a way that they exploded in the atmosphere — exactly the method you would use for an EMP attack," he said.

Iran's arsenal of atomic bombs would be no match for the US, which could obliterate any memory of Islamist Iran in a matter of minutes. But, Pry told The Times of Israel, he believes that Iran could get the most leverage out of a nuclear bomb by using it to trash large parts of the electrical grid in the US, making it easy for the Islamist regime to swoop in and act as it wishes on the world stage. "They could even marshal a major Islamic invasion of Israel, massacring the Jews and ushering in the era of the 12th Imam, the Islamic messiah, whose arrival Iran's leadership believe is imminent," Pry suggested grimly.

While EMP is a serious threat, there are steps governments can take to protect their electrical systems, according to Avi Schnurr, chairman and CEO of the Electric Infrastructure Security (EIS) Council, which works with government agencies and power companies worldwide to help coordinate international efforts on electric infrastructure protection.

"In the US, the estimate is that it would cost on the order of $1 billion to make the changes that would protect the power grid against EMP," he told The Times of Israel. "I don't have an estimate for Israel, but given the enormous difference in the sizes of the two countries and their power grids, it should be extremely affordable — no more than a fraction of a percent of Israel's annual electric bill."

"Hardening" electrical infrastructure against EMP attack would entail making some gradual changes to the power grid, such as the installation of devices like GIC (geomagnetically induced current) blockers.

Even if Iran were not developing a nuclear weapon, protecting the power grid in this manner would be a good idea, said Pry. "You don't need a nuclear weapon to set off an EMP. You can also easily get a non-nuclear pulse generator," he said. "They're perfectly legal. A terrorist could detonate one next to an electrical station and effectively black out a city or region. Such weapons don't do as much damage as a nuclear pulse does, but they are effective enough."

In fact, when it comes to EMP, nature itself can be an enemy. "An EMP can be caused by an event like a severe solar storm," said Pry. Such events have occurred on at least two previous occasions – including in 1859, when the largest recorded geomagnetic storm ever was recorded. British astronomer Richard Carrington observed the storm's largest flare, which caused a major coronal mass ejection (CME) to travel directly toward the Earth — leading telegraph systems all over Europe and North America to fail, in some cases shocking telegraph operators before blowing out because of the overload of electricity in the wires. (The phenomenon is named the Carrington effect, after the astronomer.)

It takes political will to do what is necessary to protect the grid, said Schnurr, and that will is beginning to show itself in Western countries, including in Israel, which, Schnurr claims, is more aware, and more active in the hardening of its grid, than most countries. "Work is going on associated with protecting the grid," continued Schnurr. There is a greater degree and breadth of awareness on this issue, which is part of the reason why efforts have been made."

Cost need not be a barrier, Schnurr stressed. Relatively speaking, "the cost associated with hardening the grid is quite small," he said. Getting it done, he said, is of the utmost priority, and that will be the great challenge of governments — from Israel to the US, and many others — in the coming period.


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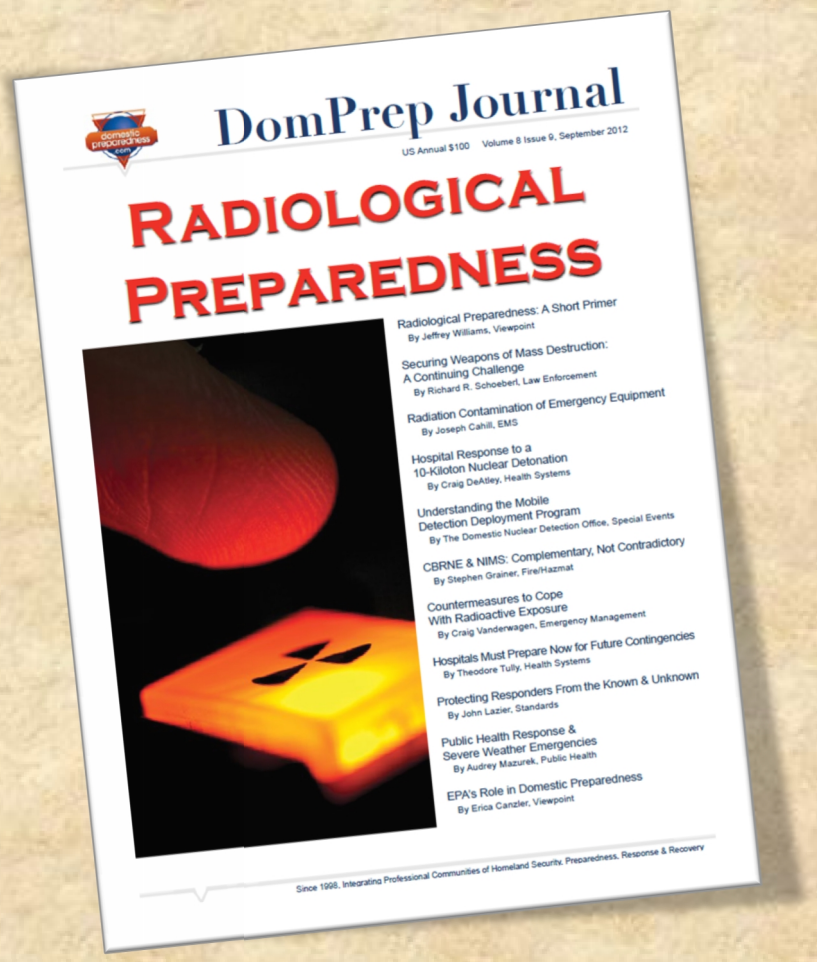
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Terrorists 'acquire nuclear container to smuggle uranium'

Sourcehttp://www.telegraph.co.uk/news/worldnews/9616152/Terrorists-acquire-nuclear-container-to-smuggle-uranium.html:

Speaking in London, Yukiya Amano of the International Atomic Energy Agency, said groups' efforts to build a dirty bomb were becoming "more professional".

It was particularly worrying, he said, that smuggling networks had hold of technology to evade sophisticated monitoring equipment designed to prevent proliferation of radioactive material.

"Terrorists having access to nuclear material is a real threat," he said. "They have developed a particular container to put enriched uranium in as samples. The groups repeat [deliveries] to defeat the preventive measures. This is a real threat."

Patricia Lewis, the head of the international security at Chatham House, said Mr Amano's comments appeared to confirm suspicions that groups had got their hands on devices used by scientists to prevent radioactive emissions in transit.

"It is worrying because these containers can get past detectors," she said. "We use these devices for security to block isotopes and you can certainly hide Highly Enriched Uranium in them. They can certainly get through the detectors."

In May, a Moldovan court convicted three people for illegal trafficking of refined uranium that can be used in making nuclear weapons. The three were part of a five-member group that was said to be attempting exchange of a cylinder containing the radioactive material for cash. Intelligence services from several other countries, principally the US, Germany and Ukraine, were involved in the case.

Georgia's government last year claimed it had broken up several smuggling syndicates. At least 55 pounds of highly enriched uranium would be needed in a dirty bomb but an estimated 700 tons is stored on Russian military bases.

A security expert who attended Mr Amano's speech said the IAEA head was referring to incidents that had been detected but the agency had not been able to put a stop to smugglers.

"It's not wholly new technology but it has been tightly held," said the expert who asked not to be identified. "I imagine the IAEA has at least one incident where this box evaded detection but then was found in a search. But there must be other intelligence that there are more containers out there."

Scientists have used lead-lined boxes for years to transport uranium. The industry has acknowledged for years that these boxes could be adapted by

smugglers or fall into the wrong hands.

Mr Amano revealed that the agency had catalogued 2,200 attempts to steal or smuggle uranium since 1995.

Although detection equipment was cheap and effective, its fears over terrorist groups acquiring a dirty bomb had not abated.

The risk to modern cities was that a radioactive device built from uranium assembled by a bomb maker was considerable.

"This would not be a fully-fledged "nuclear bomb." Mr Amano said. "But such an attack could lead to mass panic and cause considerable economic disruption."

Miss Lewis said the number of incidents published by the IAEA did not represent the full scale of the threat.

"Not all of these were reported as missing. Is that because the organisation that lost the material didn't know or didn't want to say," she said. "There is no real sense of how big this is. Is the figure fairly accurate or the tip of the iceberg. Nobody knows."

Two decades after the fall of the Soviet empire left vast stores of radioactive material vulnerable to sale or capture, Mr Amano called on the world to redouble efforts to prevent proliferation.

"We have to train people and we have to provide equipment," Amano said. "Most of these (incidents) are very minor but some are very serious."