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Medical Journal Article: 14,000 U.S. Deaths Tied to Fukushima Reactor Disaster Fallout

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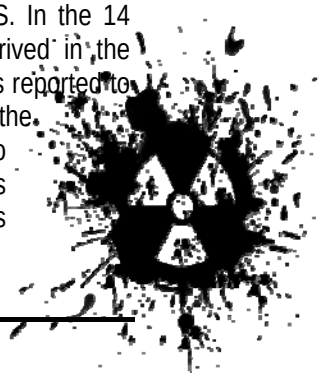
Impact Seen As Roughly Comparable to Radiation-Related Deaths After Chernobyl; Infants Are Hardest Hit, With Continuing Research Showing Even Higher Possible Death Count.

An estimated 14,000 excess deaths in the United States are linked to the radioactive fallout from the disaster at the Fukushima nuclear reactors in Japan, according to a major new article in the December 2011 edition of the International Journal of Health Services. This is the first peer-reviewed study published in a medical journal documenting the health hazards of Fukushima.Authors Joseph Mangano and Janette Sherman note that their estimate of 14,000 excess U.S. deaths in the 14 weeks after the Fukushima meltdowns is comparable to the 16,500 excess deaths in the 17 weeks after the Chernobyl meltdown in 1986. The rise in reported deaths after Fukushima was largest among U.S. infants under age one. The 2010-2011 increase for infant deaths in the spring was 1.8 percent, compared to a decrease of 8.37 percent in the preceding 14 weeks.The IJHS article will be published Tuesday and will be available online as of 11 a.m. EST at http://www.radiation.org . Just six days after the disastrous meltdowns struck four reactors at Fukushima on March 11, scientists detected the plume of toxic fallout had arrived over American shores. Subsequent measurements by the U.S. Environmental Protection Agency (EPA) found levels of radiation in air, water, and milk hundreds of times above normal across the U.S. The highest detected levels of Iodine-131 in precipitation in the U.S. were as follows (normal is about 2 picocuries I-131 per liter of water): Boise, ID (390); Kansas City (200); Salt Lake City (190); Jacksonville, FL (150); Olympia, WA (125); and Boston, MA (92). Epidemiologist Joseph Mangano, MPH MBA, said: "This study of Fukushima health hazards is the first to be published in a scientific journal. It raises concerns, and strongly suggests that health studies continue, to understand the true impact of Fukushima in Japan and around the world. Findings are important to the current debate of whether to build new reactors, and how long to keep aging ones in operation."Mangano is executive director, Radiation and Public Health Project, and the author of 27 peer-reviewed medical journal articles and letters. Internist and toxicologist Janette Sherman, MD, said: "Based on our continuing research, the actual death count here may be as high as 18,000, with influenza and pneumonia, which were up five-fold in the period in question as a cause of death. Deaths are seen across all ages, but we continue to find that infants are hardest hit because their tissues are rapidly multiplying, they have undeveloped immune systems, and the doses of radioisotopes are proportionally greater than for adults."Dr. Sherman is an adjunct professor, Western Michigan University, and contributing editor of "Chernobyl - Consequences of the Catastrophe for People and the Environment" published by the NY Academy of Sciences in 2009, and author of "Chemical Exposure and Disease and Life's Delicate Balance - Causes and Prevention of Breast Cancer."The Centers for Disease Control and Prevention (CDC) issues weekly reports on numbers of deaths for 122 U.S. cities with a population over 100,000, or about 25-30 percent of the U.S. In the 14 weeks after Fukushima fallout arrived in the U.S. (March 20 to June 25), deaths reported to the CDC rose 4.46 percent from the same period in 2010, compared to just 2.34 percent in the 14 weeks prior. Estimated excess deaths



during this period for the entire U.S. are about 14,000.

Iran's Nukes and Israel's Dilemma

By Yoaz Hendel

Source: http://www.meforum.org/3139/iran-nuclear-weapons-israel

Editors' note: Yoaz Hendel now works in the Israeli prime minister's office. This article was written before his government service; views expressed herein are his alone.

While the Obama administration has not reconciled itself to the futility of curbing Tehran's nuclear buildup through diplomatic means, most Israelis have given up hope that the international sanctions can dissuade the Islamic Republic from acquiring the means to murder by the millions. Israel's leadership faces a stark choice—either come to terms with a nuclear Iran or launch a preemptive military strike.

Ahmadinejad delivers his "Wipe Israel from the map" speech at Tehran's The World without Zionism conference, October 26, 2005. Iran's genocidal intentions have been repeatedly spelled out by current and former leaders in Tehran, and it is wise for the Israeli leadership to take the rhetoric—combined as it is with the hard facts of Iran's nuclear subterfuge—seriously.

The Begin Doctrine

When the Israeli Air Force (IAF) decimated Iraq's Osirak nuclear reactor thirty years ago, drawing nearly universal condemnation, the government of prime minister Menachem Begin declared Israel's "determination to prevent confrontation states … from gaining access to nuclear weapons." Then-defense minister Ariel Sharon explained, "Israel cannot afford the introduction of the nuclear weapon [to the Middle East]. For us, it is not a question of balance of terror but a question of survival. We shall, therefore, have to prevent such a threat at its inception"[1]

This preventive counter-proliferation doctrine is rooted in both geostrategic logic and historical memory. A small country the size of New Jersey, with most of its inhabitants concentrated in one central area, Israel is highly vulnerable to nuclear attack. Furthermore, the depth of hostility to Israel in the Muslim Middle East is such that its enemies have been highly disposed to brinksmanship and risk-taking. Given the Jewish people's long history of horrific mass victimization, most Israelis find it deeply unsettling to face the threat of annihilation again.

While the alleged 2007 bombing of Syria's al-Kibar reactor underscored Jerusalem's willingness to take military action in preventing its enemies from developing nuclear weapons, its counter-proliferation efforts have relied heavily on diplomacy and covert operations. The raid on Osirak came only after the failure of Israeli efforts to dissuade or prevent France from providing the necessary hardware. Likewise, the Israelis have reportedly been responsible for the assassinations of several Iranian nuclear scientists in recent years.[2] They reportedly helped create the Stuxnet computer worm, dubbed by *The New York Times* "the most sophisticated cyber weapon ever deployed," which caused major setbacks to Iran's uranium enrichment program in 2009.[3] However, such methods can only slow Tehran's progress, not halt or reverse it.

The Iranian Threat

Tehran has already reached what Brig. Gen. (res.) Shlomo Brom has called the "point of irreversibility" at which time the proliferator "stops being dependent on external assistance" to produce the bomb.[4] Most Israeli officials believe that no combination of likely external incentives or disincentives can persuade the Iranians to verifiably abandon the effort. The Iranian regime has every reason to persevere in its pursuit of the ultimate weapon. While the world condemned North Korea's development of nuclear weapons, it was unwilling to apply sufficient penalties to dissuade Pyongyang from building the bomb.

The regime has an impressive ballistic missile program for delivering weapons of mass destruction. The Iranians began equipping themselves with SCUD missiles during the 1980-88 Iran-Iraq war.[5] Afterward, it turned to North Korea for both missiles and the technology to set up its own research and production facilities. Tehran has produced hundreds of Shahab-3 missiles, which have a range of nearly 1,000 miles and can carry a warhead weighing from 500 kilograms to one ton.[6] In 2009, Tehran successfully tested a new two-stage, solid propellant missile, the Sejil-2, which has a range of over 1,200 miles, placing parts of Europe within its reach.

There is some disagreement as to how long it will take Tehran to produce a nuclear weapon. While the government of Israel has claimed that Iran is within a year or two of this goal, in January 2011, outgoing Mossad director Meir Dagan alleged that Iran will be unable to attain it before 2015.[7]

Iranian Intentions

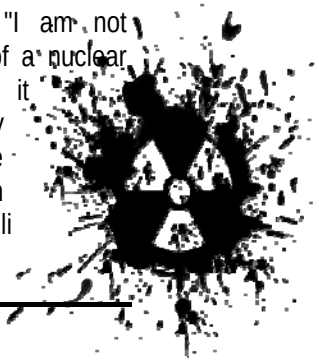
Much of the debate in Israel is focused on the question of Iranian intentions. The fact that Tehran has poured staggering amounts of money, human capital, and industrial might into nuclear development—at the expense of its conventional military strength, which has many gaps, not to mention the wider Iranian economy—is by itself a troubling indicator of its priorities. Prime Minister Benjamin Netanyahu and many other leading Israeli political and security figures view the Islamic Republic as so unremittingly hostile that "everything else pales" before the threat posed by its pursuit of nuclear weapons.[8]

Proponents of this view draw upon repeated threats by President Mahmoud Ahmadinejad to wipe Israel off the map[9] and Iranian support for radical Palestinian and Lebanese groups seeking its destruction. They also point to Ahmadinejad's radical millenarian strand of Shiite Islamism.[10] Shiites believe that the twelfth of a succession of imams directly descendant of the Prophet Muhammad went into hiding in the ninth century and will one day return to this world after a period of cataclysmic war to usher in an era of stability and peace.

Ahmadinejad appears to believe that this day will happen in his lifetime. In 2004, as mayor of Tehran, he ordered the construction of a grand avenue in the city center, supposedly to welcome the Mahdi on the day of his reappearance. As president, he allocated $17 million for a mosque closely associated with the Mahdi in the city of Jamkaran.[11] Rather than seeking to reassure the world about Tehran's peaceful intentions during his 2007 address before the U.N. General Assembly, Ahmadinejad embarked on a wide-eyed discourse about the wonders of the Twelfth Imam: "There will come a time when justice will prevail across the globe ... under the rule of the perfect man, the last divine source on earth, the Mahdi."[12]

The fear in Israel is that someone who firmly believes an apocalyptic showdown between good and evil is inevitable and divinely ordained will not be easily deterred by the threat of a nuclear war. "There are new calls for the extermination of the Jewish State," Netanyahu warned during a January 2010 visit to Israel's Holocaust museum, Yad Vashem. "This is certainly our concern, but it is not only our concern."[13] For Netanyahu, a nuclear Iran is a clear and present existential threat.

Those who dissent from this view point out that the Iranian people are not particularly hostile to Israelis; indeed, the two countries enjoyed close relations before the 1979 Iranian revolution. They argue that the Iranian regime's militant anti-Zionism is a vehicle for gaining influence in the predominantly Sunni Arab Middle East but not something that would drive its leaders to commit suicide. "I am not underestimating the significance of a nuclear Iran, but we should not give it Holocaust subtext like politicians try to do," said former Israel Defense Forces (IDF) chief of staff Dan Halutz, who commanded the Israeli



military during the war in Lebanon in 2006.[14] Defense Minister Ehud Barak said in a widely circulated September 2009 interview that Iran was not an "existential" threat to Israel.[15]

The question of whether Iran is an existential danger is more rhetorical than substantive. Even if Iranian nuclear weapons are never fired, their mere existence would be a profound blow to most Israelis' sense of security. In one poll, 27 percent of Israelis said they would consider leaving the country if Tehran developed nuclear capabilities. Loss of investor confidence would damage the economy. This could spell the failure of Zionism's mission of providing a Jewish refuge as Jews will look to the Diaspora for safety.[16] This is precisely why Israel's enemies salivate over the possibility of an Iranian bomb.

Even if the prospect of mutually assured destruction effectively rules out an Iranian first strike, Tehran's acquisition of nuclear weapons would still shift the balance of power greatly. Iran projects its power throughout the Middle East mainly by way of allies and proxies, such as Muqtada al-Sadr's Mahdi army in Iraq, Hamas in Gaza, the Assad regime in Syria, and Hezbollah in Lebanon. The Iranian nuclear umbrella will embolden them. The next time an Israeli soldier is abducted in a cross-border attack by Hezbollah or Hamas, Jerusalem will have to weigh the risks of a nuclear escalation before responding. There is also the possibility that Tehran could provide a nuclear device to one of its terrorist proxies.[17]

A successful Iranian bid to acquire the bomb will set off an unprecedented nuclear arms race throughout the region. Arab countries such as Egypt, Saudi Arabia, Jordan, and the United Arab Emirates will want to create their own nuclear insurance policies in the face of Tehran's belligerence and regional ambitions. Turkey has passed a bill in its parliament paving the way for the construction of three nuclear reactors by 2020.[18]

Most of Israel's decision-makers believe that Israel cannot afford the risks of living with a nuclear Iran. Those who publicly differ with Netanyahu on this score seem mainly concerned that he is exploiting popular fears for political gain, but they are likely to fall in line with public opinion at the end of the day. The large majority of Israelis support a military strike on Iran's nuclear facilities as a last resort, and a small majority (51 percent according to a 2009 poll) favor an immediate strike on Iran as a first resort.[19]

The Military Option

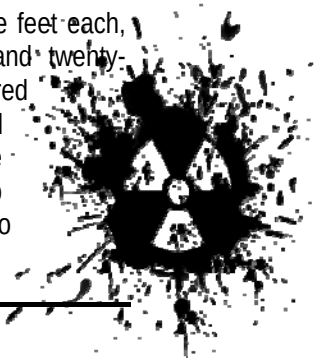
The general assessment is that the IDF has the ability to knock out some of Tehran's key nuclear facilities and set back its nuclear program by a couple of years but not completely destroy it—at least not in one strike.[20] Several factors make Iran's nuclear program much more difficult to incapacitate than that of Saddam Hussein's Iraq.

Whereas most of Iraq's vital nuclear assets were concentrated at Osirak, "Iran's nuclear facilities are spread out," notes former IDF chief of staff Ya'alon,[21] some of them in close proximity to population centers. The distance to targets in Iran would be considerably greater than to Osirak, and its facilities are better defended. Iran has mastered nuclear technology much more thoroughly than Iraq and can, therefore, repair much of the damage without external help.

Of the known Iranian nuclear sites, five main facilities are almost certain to be targeted in any preemptive strike. The first is the Bushehr light-water reactor, along the gulf coast of southwestern Iran. The second is the heavy-water plant under construction near the town of Arak, which would be instrumental to production of plutonium. Next is the uranium conversion facility at Isfahan. Based on satellite imagery, the facility is above ground although some reports have suggested tunneling near the complex.[22]

Fourth is the uranium enrichment facility at Qom, which the Iranians concealed from the International Atomic Energy Agency (IAEA) prior to September 2009 and well after major Western intelligence agencies knew about it. The facility, which can hold about 3,000 centrifuges, was built into a mountain, making it difficult to penetrate. Israeli defense minister Barak called it "immune to standard bombs."[23]

The fifth and most heavily fortified primary target is the main Iranian uranium enrichment facility in Natanz. The complex consists of two large halls, roughly 300,000 square feet each, dug somewhere between eight and twenty-three feet below ground and covered by several layers of concrete and metal. The walls of each hall are estimated to be approximately two feet thick. The facility is also



surrounded by short-range, Russian-made TOR-M surface-to-air missiles.

Military planners may also feel compelled to attack Tehran's centrifuge fabrication sites since their destruction would hamper the efforts to reestablish its nuclear program. However, it is believed that the Iranians have dispersed some centrifuges to underground sites not declared to the IAEA. It is by no means clear that Israeli intelligence has a full accounting of where they are.

The Israelis may also choose to bomb Iranian radar stations and air bases in order to knock out Tehran's ability to defend its skies, particularly if multiple waves are required. Ya'alon estimates that Israel would need to attack a few dozen sites.[24]

The Operation

The Israeli Air Force is capable of striking the necessary targets with two to three full squadrons of fighter-bombers with escorts to shoot down enemy aircraft; however, most of the escorts will require refueling to strike the necessary targets in Iran.[25] In addition, the Israelis can make use of ballistic missiles and cruise missiles from their Dolphin-class submarines.

The IAF has carried out long-range missions in the past. In 1981, Israeli F-16s struck the Osirak reactor without midair refueling. Refueling tankers were activated for Israel's longest-range air strike to date, the 1985 bombing of the Palestine Liberation Organization's (PLO) headquarters in Tunis, 1,500 miles away. The IAF's highly publicized 2009 flyover over Gibraltar was widely perceived as a dress rehearsal for a strike against Iran.[26] In 2009, the IAF instituted a new training regimen that included refueling planes as their engines were on and sitting on the runway with fuel nozzles disconnected seconds before takeoff.

The IAF has specialized munitions designed to penetrate fortified targets, including GBU-27 and GBU-28 laser-guided bunker buster bombs and various domestically produced ordnance. Israeli pilots are skilled at using successive missile strikes to penetrate fortifications. "Even if one bomb would not suffice to penetrate, we could guide other bombs directly to the hole created by the previous ones and eventually destroy any target," explains former IAF commander Maj. Gen. Eitan Ben-Eliyahu, who participated in the strike on Osirak.[27]

Israel's advanced electronic-warfare systems are likely to be successful in suppressing Iran's air defenses although these were significantly upgraded by Moscow during the 2000s.[28] Moreover, whereas thirty years ago, Israeli pilots needed to fly directly over Osirak to drop their bombs, today they can fly at higher altitudes and launch satellite or laser-guided missiles from a safer distance. Nor are Tehran's roughly 160 operational combat aircraft, mostly antiquated U.S. and French planes, likely to pose a serious threat to Israeli pilots.

Possible Attack Routes

The main problem Jerusalem will encounter in attacking Iran's nuclear facilities results from the long distance to the main targets. Since greater distance always means that more things can go wrong, Israeli losses and efficacy will likely depend on which of three possible routes they take to Iran.

The northern route runs along the Turkish-Syrian border into Iran and is estimated to be about 1,300 miles. This route entails several risks and would need to take into account Syrian air defenses and Turkish opposition to violating its airspace. Israeli planes flew over Turkey when the IAF bombed al-Kibar in 2007 and even dropped fuel tanks in Turkish territory. However, the recent deterioration in relations between Ankara and Jerusalem makes it extremely unlikely that the Turkish government will allow such an intrusion.

The central route over Jordan and Iraq is the most direct, bringing the distance to Natanz from the IAF's Hatzerim air base down to about 1,000 miles, yet it entails serious diplomatic obstacles. Jerusalem would have to coordinate either with the Jordanians and the Americans or fly without forewarning. While Israel has a peace treaty with Jordan, Amman will not want to be perceived as cooperating with Israeli military action against Tehran and thus possibly face the brunt of an Iranian reprisal. Washington may not want to be involved either, as it needs Tehran's acquiescence to withdraw its forces from Iraq successfully. While Jerusalem could limit the risk of hostile fire by notifying its two allies of the impending attack, there would be considerable diplomatic costs.

The southern route would take Israeli planes over Saudi Arabia and then into Iran. While this is

longer than the central route, there have been reports that the Saudis have given Jerusalem permission to use their airspace for such an operation.[29]

The difficulties also depend on the precise goal of the air strike. A short-term, financially costly degradation of Iran's nuclear program can be achieved in one wave of attacks, but Israeli defense analysts have estimated that a decisive blow could require hitting as many as sixty different targets with return sorties lasting up to two days.

Estimates in Israel vary regarding the losses the IAF might suffer in such an operation.[30] Some estimates claim that with their advanced, Russian-supplied air defense systems, the Iranians might be able to shoot down a small number of aircraft. But even just a few pilots shot down and captured by Iran would be a heart-wrenching tragedy for Israelis. To prepare for this, in 2009 the IAF began increasing mental training for its airmen with an emphasis on survival skills.

Many former, high-ranking generals and intelligence chiefs have cast doubt on whether Jerusalem can succeed in decisively setting back Tehran's nuclear program. Addressing an audience at the Hebrew University of Jerusalem in May 2011, Meir Dagan said that the idea of attacking Iranian nuclear sites was "the stupidest thing" he had ever heard and that such an attempt would have a near-zero chance of success.[31]

The Fallout

The strategic fallout from an Israeli attack will likely be significant. Hezbollah will probably initiate hostilities across the Lebanese-Israeli border. During the 2006 Israel-Hezbollah war, the Shiite Islamist group fired more than 4,000 rockets into Israel, causing extensive damage and killing forty-four civilians.[32] Today, its arsenal is considerably larger and includes many more rockets capable of reaching Tel Aviv. Dagan estimates that the Iranians can fire missiles at Israel for a period of months, and that Hezbollah can fire tens of thousands of rockets.[33] Hamas may also attack Israel with rockets from Gaza. It is not inconceivable that Syrian president Bashar Assad would join the fight, if still in power, in hope of diverting public anger away from his regime.

Iran has also developed an extensive overseas terrorist network, cultivated in conjunction with Hezbollah. This network was responsible for two car bombings against the Jewish community in Argentina that left 114 people dead in the early 1990s.[34]

Last year, Israel distributed gas masks to prepare for the possibility that Iran or Syria would deploy chemical or biological weapons[35] while the IDF's Home Front Command received an increased budget to prepare bomb shelters and teach the public what to do in case of emergency.[36] C4I systems were improved between early-warning missile detection systems and air sirens, including specially designed radars that can accurately predict the exact landing site of incoming missiles. Since no one is certain how accurate Iran's Shahab and Sajil missiles are, Jerusalem began strengthening defenses at its Dimona nuclear reactor in 2008.[37]

Jerusalem will not sit back and allow its citizens to be bombed mercilessly. Since Lebanon will probably be the main platform of any major Iranian attack, Israeli retaliation there is sure to be swift and expansive. Should Syria offer up any form of direct participation in the war, it too may come under Israeli attack. The Israelis may go so far as to bomb Iran's oil fields and energy infrastructure. Since oil receipts provide at least 75 percent of the Iranian regime's income and at least 80 percent of export revenues, the political shock of losing this income could lead the regime to rethink its nuclear stance, as well as erode its public support, and make it more difficult to finance the repair of damaged nuclear facilities.[38]

On the other hand, Tehran may double down by sending its own ground troops to Lebanon or Syria to join the fight against Israel. This could draw in the Persian Gulf Arab monarchies, particularly if the Alawite-led Assad regime is still facing active opposition from its majority Sunni population.

How long such a war will last is impossible to predict. Israel's defense doctrine calls for short wars, so it will likely launch a diplomatic campaign with Western backing to end the war as soon as possible. However, the Iranians may hunker down for the long haul, much as they did during the 8-year Iran-Iraq war.[39]

If a military solution cannot guarantee success at an acceptable price, some in Israel argue that the best hope for countering the threat posed by Iranian nuclear weapons is regime change. "The nuclear matter will resolve itself once there is a regime change,"

says Uri Lubrani, Israel's former ambassador to Iran and a senior advisor to the Israeli defense minister until last year. According to Lubrani, the highest priority for Israel and the West should be to strengthen the Iranian masses that rose up in protest following the fraudulent June 2009 elections.[40]

"A military strike will at best delay Iran's nuclear program, but what's worse, it will rally the Iranian people to the defense of the regime," says Lubrani. He argues that it is better to let sanctions eat away at the regime's legitimacy even if they do not lead to a stand down on its nuclear program.[41]

However, it is not clear whether Lubrani is correct in his assessment that war will benefit the regime. While most Iranians are generally supportive of their country's nuclear ambitions, devastating Israeli air strikes may drive home the folly of their government's reckless provocations just as they did during the later stages of the Iran-Iraq war. It is unlikely that many are willing to sacrifice their country's well-being in pursuit of the bomb.

Whether an Israeli attack will unite the public for or against President Ahmadinejad and Supreme Leader Ali Khamene'i is anyone's guess. Much will depend on whether the air strikes produce significant collateral damage. The Bushehr, Isfahan, and Natanz facilities contain uranium hexafluoride (UF6) and even some low-enriched uranium, the release of which into the environment would almost certainly raise public health concerns.

Conclusion

The Israelis will ultimately have to choose between launching an attack likely to spark a large-scale regional conflict and allowing Iran to go nuclear with dire long-term implications. Notwithstanding some disagreement about the immediacy of the threat and possible repercussions, the large majority of Israelis favor military action over living with the ubiquitous threat of nuclear annihilation.

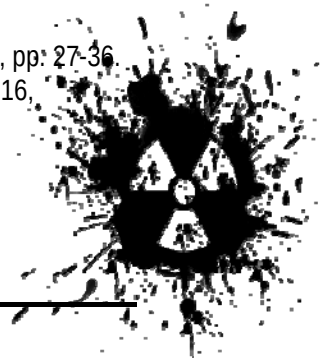
With a U.N. vote on Palestinian statehood threatening to erode Israel's international standing still further, attacking Iran could prove dangerously isolating for Israel even with Washington's blessing—to proceed without it would be a step into the unknown. Much, therefore, depends on whether policymakers in Washington will stand by Jerusalem when push eventually comes to shove.

The American people have increasingly come to recognize the threat to world peace posed by Iran. Whereas 6 percent of Americans named Iran as the country that poses the greatest threat to the United States in 1990, in 2006, Iran led the field with 27 percent.[42] However, though Washington's official stance is that all options remain on the table, Obama is unlikely to undertake direct military action to stop Tehran from building the bomb and may prove reluctant to tacitly support Israeli action.

That is why the decision will ultimately be left to Israel, or rather to its prime minister, who will be faced with a Churchillian dilemma, unprecedented in the Jewish state's history.

Notes:

[1] Ariel Sharon, address, Government Press Office, Jerusalem, Dec. 15, 1981.
[2] *The Sunday Times* (London), Feb. 4, 2007; *The Washington Post*, Nov. 29, 2010; *The Observer* (London), Dec. 5, 2010.
[3] *The New York Times*, Jan. 16, 2011.
[4] Shlomo Brom, "Is the Begin Doctrine Still a Viable Option for Israel?" in Henry Sokolski and Patrick Clawson, eds., *Getting Ready for a Nuclear-Ready Iran* (Carlisle, Pa.: U.S. Army War College, Strategic Studies Institute, 2005), p. 139.
[5] Yiftah S. Shapir, "Iran"s Ballistic Missiles," *Strategic Assessment INSS,* Aug. 2009.
[6] Ibid.
[7] *Ha'aretz* (Tel Aviv), Jan. 7, 2011.
[8] Ibid., Nov. 14, 2006.
[9] Islamic Republic of Iran Broadcasting (Tehran), Oct. 27, 2005.
[10] See Mohebat Ahdiyyih, "Ahmadinejad and the Mahdi," *Middle East Quarterly*, Fall 2008, pp. 27-36.
[11] Charles Krauthammer, "In Iran, Arming for Armageddon," *The Washington Post*, Dec. 16, 2005.
[12] Islamic Republic News Agency, Sept. 26, 2007.
[13] Benjamin Netanyahu, speech, Jerusalem, Jan. 25, 2010.
[14] *The Jerusalem Post*, Oct. 15, 2010.



[15] Reuters, Sept. 17, 2009.
[16] Yossi Klein Halevi and Michael B. Oren, "Israel Cannot Live with a Nuclear Iran," *The New Republic,* Jan. 26, 2010.
[17] Chuck Freilich "The Armageddon Scenario: Israel and the Threat of Nuclear Terrorism," *BESA Center Perspectives Papers* (Ramat Gan), Apr. 8, 2010.
[18] See Yoel Guzansky, "The Saudi Nuclear Option," *INSS Insight*, Institute for National Security Studies, National Defense University, Washington, D.C., Apr. 2010; John Bolton, "Get Ready for a Nuclear Iran," *The Wall Street Journal*, May 2, 2010.
[19] *YNet News* (Tel Aviv), May 24, 2009.
[20] Whitney Raas and Austin Long, "Osirak Redux? Assessing Israeli Capabilities to Destroy Iranian Nuclear Facilities," *International Security*, Spring 2007, pp. 7-33.
[21] *Jane's Defence Weekly* (London), Mar. 10, 2006.
[22] *The New York Times*, Jan. 5, 2010.
[23] *The Jerusalem Post*, Dec. 28, 2009.
[24] *Jane's Defence Weekly*, Mar. 10, 2006.
[25] Raas and Long, "Osirak Redux?" pp. 7-34.
[26] *Ynet News*, Mar. 5, 2009.
[27] *Jane's Defense Weekly*, Mar. 4, 2005.
[28] Anthony H. Cordesman, "The Iran Attack Plan," *The Wall Street Journal*, Sept. 25, 2009.
[29] *The Sunday Times*, June 12, 2010.
[30] Brom, "Is the Begin Doctrine Still a Viable Option for Israel?" pp. 148-9.
[31] *Ha'aretz*, May 7, 2011; *The Jewish Daily Forward* (New York), May 20, 2011.
[32] *Fox News*, Mar. 27, 2008; *The Guardian* (London), Apr. 11, 2011.
[33] *Ha'aretz*, May 7, 2011.
[34] *BBC News*, Mar. 27, 2011.
[35] *Ha'aretz*, May 1, 2010.
[36] *Ha'aretz*, June 17, 2009; "Israeli Civilians Prepare for Life-Threatening Scenarios," Israel Defense Forces Spokesperson's Unit, June 22, 2011.
[37] *Pakistan Daily* (Lahore), Oct. 3, 2008.
[38] Patrick Clawson and Michael Eisenstadt, "The Last Resort," The Washington Institute for Near East Policy, Washington, D.C., June 2008.
[39] Moshe Vered, "Ending an Iranian-Israeli War," *Mideast Security and Policy Studies,* Sept. 2009.
[40] David Horovitz, "Editor's Notes: Playing Chess against Tehran," interview with Uri Lubrani, Mar. 11, 2011; *The Wall Street Journal*, Mar. 13, 2010.
[41] *The Wall Street Journal*, Mar. 13, 2010.
[42] Associated Press, July 2, 2006.

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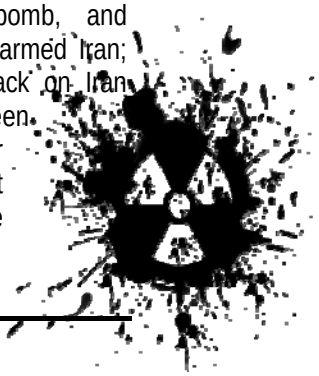
The Iran decision: the pros and cons of the military option

Source: http://www.homelandsecuritynewswire.com/bull20111228-the-iran-decision-the-pros-and-cons-of-the-military-option-i

Short of unforeseen developments, the real decision U.S., Israeli, and European leaders will face in 2012 is not whether to use military means or other means to stop Iran from acquiring nuclear weapons or the capability to produce them; the real decision, rather, will be between using military means to stop Iran's confident march toward the bomb, and accepting the reality of a nuclear-armed Iran; those who support a military attack on Iran argue that the choice is thus between two very bad options: a nuclear armed Iran or a war to prevent it from going nuclear; each of these



options has its costs, but the costs of allowing Iran to become a nuclear weapon state far outweigh the costs of using a military attack to prevent it from becoming one

The coming year will likely be the year during which a decision is made as to whether or not to use military action to prevent Iran from acquiring nuclear weapons.

To be more precise: Iran may well decide that it would serve its interests better to stop short of building a bomb, and instead be in a position where it is one screw turn away from the bomb. This is a stage at which it has sufficient amount of highly enriched uranium for several bombs, a credible warhead design and the machining capabilities to put it together, and the missiles to carry nuclear warheads to their targets. At that stage, Iran will be able to produce nuclear weapons within a few short months after making the decision to do so.

The decision for those who do not want to see a nuclear-armed Iran must thus include not only the determination of whether or not to prevent Iran from actually building a bomb, but also a determination regarding what bomb building-related capabilities Iran would not be allowed to acquire, and how close to building a bomb would Iran be allowed to get.

The coming year is likely to be the year of decision because of two reasons:

- Despite being hobbled and slowed down in its pursuit of the bomb by a sustained covert campaign by Israel and the United States, a campaign which includes assassinations of nuclear scientists, malware attacks, blowing up of labs and missile test facilities, and more, Iran has proved determined and resilient in its pursuit of the bomb. It is now closer to the bomb than it was five years ago, or a year ago.
- The economic sanctions imposed on Iran have been costly and painful, but not costly or painful enough to persuade Iran to cease and desist.

Short of unforeseen developments, the real decision U.S., Israeli, and European leaders will face in 2012 is thus not whether to use military means or other means to stop Iran from acquiring nuclear weapons or the capability to produce them. The real decision, rather, will be between using military means to stop Iran's confident march toward the bomb, and accepting the reality of a nuclear-armed Iran.

In this article I summarize the main arguments for and against a military action against Iran. For a more detailed argument for attacking Iran, see Matthew Kroenig, "Time to Attack Iran: Why a Strike Is the Least Bad Option" href="http://www.foreignaffairs.com/articles/136917/matthew-kroenig/time-to-attack-iran">Foreign Affairs (January-February 2012). I summarize below some of his arguments for attacking Iran. Tomorrow I will summarize the arguments against such an attack.

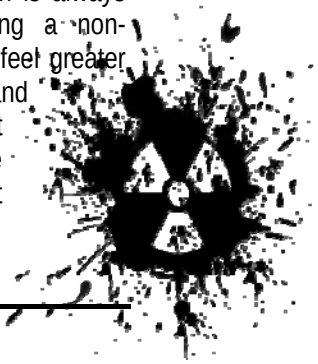
The arguments for military action

Those who argue for military action to stop Iran from acquiring nuclear weapons do not say such action would not be costly or risky. They argue, rather, that of the two options we face – allowing Iran to acquire nuclear weapons or attacking it militarily to stop it from doing so – an attack on Iran would be the least bad option. Their argument is based on three assumptions: a nuclear-armed Iran would be very bad for the United States, the region, and the world; a military action to defang Iran is possible; the retaliatory campaign Iran is likely to launch following such an attack can be mitigated. These three assumptions are further developed this way:

The dangers of a nuclear Iran

1. A nuclear-armed Iran would severely limit the U.S. freedom of action in the region, threaten U.S. interests, and undermine U.S. initiatives. Would the United States have attacked Iraq in 1991 or 2003 if Iraq had nuclear weapons? Would NATO have attacked Libya if Qaddafi had nuclear weapons? If a country has nuclear weapons it does not mean that it will use them to attack other countries, but such a country must be handled with greater care and consideration, and its views and interests must be taken into account more than otherwise would have been the case.

2. Even if Iran would not use, or threaten to use, its nuclear weapons, these weapons would offer cover for Iran's conventional and subversive campaigns against other countries. Confronting a nuclear-armed nation is always more problematic than confronting a non-nuclear nation, and Iran may well feel greater freedom to engage in risky and destabilizing behavior knowing that its nuclear weapons would make other countries hesitate about confronting it.



3. Iran may well decide to share its nuclear weapons with state and non-state allies. The five original members of the nuclear club, and the four countries that joined the club later, have not shared their weapons with others, but an argument can be made that Iran, which sees itself as a leader of the Shi'as, may be tempted to give a couple of nuclear warheads to Hezbollah. This may allow Iran to achieve some of its strategic goals (for example, inflicting egregious injury on Israel) while maintaining deniability.
4. It is unlikely that the leading Sunni states in the region – Saudi Arabia, Egypt, Turkey – would allow their Shi'a neighbor to build a nuclear arsenal without building their own nuclear arsenals to balance Iran. Iran's acquisition of nuclear weapons should thus be seen not in isolation, but as a first step toward a regional nuclear arms race.
5. If more countries in the region acquire nuclear weapons, then conflicts in the Middle East will more likely escalate to the nuclear level sooner rather than later. During the cold war it was known as the use-them-or-lose-them syndrome. The nuclear arsenal of Israel is small, and the arsenals likely to be built by Iran, Egypt, Saudi Arabia, and Turkey, will be small as well. The states in the region will not have secure second-strike capabilities, or robust command-and-control systems. Moreover, countries in the region either border on each other or the distance between them is short. This means that a missile launched from one country against another takes very few minutes to arrive on target. These, and other, facts will create a situation in which each nuclear-armed country will be terrified of a surprise attack on its small nuclear arsenal, predisposing it to use its few nuclear weapons at the outset of any conflict.

Why containment and deterrence is not an option

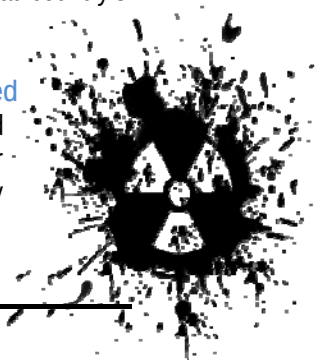
Opponents of a military attack on Iran say that the United States could use vis-à-vis Iran a regime of containment and deterrence similar to that used against the Soviet Union and China during the cold war.
Kroenig argues that the deterrence option is not viable, for three reasons.
1. The United States would have to invest billions of dollars in bolstering the defenses and command and control systems of countries in the region in order to persuade Iran that attacking or pressuring these countries would not be useful.
2. In addition, the United States, just as it has done in Europe and east Asia, would have to extend a nuclear umbrella to countries in the region. Such a nuclear umbrella – and a massive investment in these countries' defense – would be necessary not only to dissuade Iran from attacking these countries, but would also be necessary to persuade these countries not to build their own nuclear arsenals, plunging the volatile Middle East into a nuclear arms race in the process.
3. To make U.S. deterrence credible, the United States would have to station tens of thousands of soldiers in the region, position substantial naval and air assets – including nuclear weapons – in the area, and bolster its intelligence capabilities to keep a close eye on the Iranian arsenal. As has been the case in Europe and east Asia, the United States should be ready to engage in this costly and burdensome containment and deterrence regime for a few decades.

An attack on Iran is militarily possible

Those who support military action against Iran also say that such an attack is possible and will achieve its goals:
1. Most, if not all, of Iran's nuclear facilities are known and the United States has the weapons to destroy or seriously disrupt them. Moreover, most of these facilities are not located near population centers so an attack using precision-guided weapons may result in relatively small collateral damage to civilians and civilian infrastructure.
2. Even if an attack on Iran does not destroy every last node in the nuclear weapons production chain, such an attack will certainly be destructive enough to delay Iran's program by years. The 1981 Israeli attack on Iraq's nuclear facility at Osiraq prevented Saddam from making Iraq into a nuclear-armed state, and the 1991 military campaign foreclosed Iraq's nuclear weapons option. The Israeli destruction of a Syrian nuclear reactor in September 2007 put an end to that country's nuclear weapons ambitions.

Iranian retaliation can be mitigated

There is little doubt that Iran would retaliate to an attack on its nuclear facilities. Among the retaliatory measures Iran may take:



- Attack American soldiers in Afghanistan
- Order Hezbollah and Hamas to attack Israel
- Attack Israel with mid-range missiles
- Attack countries in Europe with long-range missiles
- Close the Straits of Hormuz and disrupt the supply of oil from the Gulf in other ways
- Launch a campaign of terror in the United States and other Western countries

Iran can do many other things. Kroenig argues, though, that the risk of retaliation may be mitigated in two ways: first, pre-attack measures can be taken to reduce the cost of retaliation; second, the United States would make clear to Iran that the purpose of the military campaign on Iran is not regime change, but rather the destruction of Iran's nuclear facilities. Iran would be made to understand that there are certain red lines which, if Iran crossed them in its retaliatory campaign, would cause the United States to up the ante and escalate the war to include additional targets in Iran (during the cold war they used to call this "intra-war deterrence").

In short, those who support a military attack on Iran argue that the choice is between two very bad options: a nuclear armed Iran or a war to prevent it from going nuclear. Each of these options has its costs, but the costs of allowing Iran to become a nuclear weapon state far outweigh the costs of using a military attack to prevent it from becoming one.

Ben Frankel is the editor of the Homeland Security Newswire

New method may lead to improved detection of nuclear materials

Source: http://www.gizmag.com/nuclear-detector-north-western/20252/

Scientists at Northwestern University, Illinois,

have outlined a new method for detecting electromagnetic radiation at the high energy end of the spectrum. The work could lead to the development of a small, hand held device able to detect this "hard radiation" and has implications for the detection of radioactive materials which could potentially be employed in terrorist weapons, such as nuclear bombs or radiological dispersion devices, as well as materials employed in clandestine nuclear programs.

The threat

Even a very crude bomb resulting in a so-called "fizzle" yield may have enough energy to bring down a large building, and the release of initial radiation and fallout would be extremely hazardous in a populated area. Investigation of such threats is the responsibility of bodies such as the US Department of Energy's National Nuclear Security Administration and any new tools they may acquire can only be of benefit to the general population.

A new innovation

The Northwestern University scientists' response to this challenge comes in the form of a method they've called "dimensional reduction" which involves the creation of new semiconductor materials using heavy elements in which the majority of electrons are bound and unable to move.

"The terrorist attacks of 9/11 heightened interest in this area of security, but the problem remains a real challenge," said Mercouri G. Kanatzidis, who led the research. "We have designed promising semiconductor materials that, once optimized, could be a fast, effective and inexpensive method for detecting dangerous materials such as plutonium and uranium."

When incoming electromagnetic radiation hits the material, the resulting excitement of these "bound" electrons can be analyzed to determine what

element is emitting the radiation. This would be extremely useful in assessing any potential threat.
Because heavy elements typically have a lot of mobile electrons, detecting the small changes in their excited states is a difficult task. The teams' solution was to find a dense material with a crystalline structure in which electrons would be mobilized when hard radiation was absorbed.
The researchers have had successful results with two materials: cesium-mercury-sulfide and cesium-mercury-selenide. A big advantage of these materials is that they can be employed for hard radiation detection at room temperature, unlike previously existing semiconductor detection materials such as High-Purity Germanium (HPGe) which are typically cooled using liquid nitrogen.
The end result of Kanatzidis' research may be hand held device able to detect high energy radiation which typically just passes right through most materials. For example, a geiger counter may detect some gamma radiation but at the high energy end of the spectrum the photons can pass through undetected.
There could also be civil applications for the new method such as in the field of medical imaging.
The Northwestern University research has been supported by the Department of Homeland Security and the Defense Threat Reduction Agency and is published in the journal *Advanced Materials*.

Are 'suitcase nukes' a genuine concern?

Source: http://www.gizmag.com/suitcase-nukes-fact-or-fiction/18506/

The allegation

On the 7th September 1997, 60 Minutes broadcast an alarming news item featuring the allegations of former Russian National Security Advisor, General Aleksander Lebed. Lebed claimed that the former Soviet Union had not only manufactured *but had lost track of perhaps 100* of a very frightening weapon: a nuclear bomb in a casing which made it appear to be a small suitcase, designed to be detonated by a single operator with as little as a single half-hours notice. Lebed claimed that the devices had a yield of 1 kiloton (equivalent to 1000 tons of TNT), measured 60 x 40 x 20 centimetres (24 x 16 x 8 inches) and, prior to the dissolution of the USSR in 1991, had been distributed to members of the GRU (foreign military intelligence directorate).
That notion such weapons might exist and that examples of them may be unaccounted for is a worrying thought to say the least! The claim, hotly denied by Russian authorities at the time, generated fears that the bombs may have fallen into the hands of terrorists. Republican Congressman Curt Weldon headed a public inquiry into the perceived risks of these bombs, and was known to carry a mock-up of one to emphasize his points.
Examples of "suitcase nukes" abound in popular fiction, but is it even possible to fabricate a nuclear weapon so small? If so, is it likely that such devices exist and are even missing?
To get to the bottom of this it is necessary to consider what makes a nuclear weapon function.

How a nuclear device works

Nuclear weapons function by assembling the right amount, of the right material, under the right conditions, at the right speed. Thankfully for humanity, given that these weapons are our most destructive innovation, meeting these conditions is easier said than done, and the required materials are *very* hard to come by.
The material needed must be 'fissile', which means it must be able to undergo a self-sustained fission chain reaction. Examples of such

materials are certain isotopes of the elements uranium and plutonium. Put simply, fission is the process by which atoms are split, yielding energy, atoms of other elements, and particles called neutrons. As neutrons have no charge, they are not repelled away when they speed toward an atom (in the same way the two like-charged poles of two magnets will push away). They can strike the nucleus of a fissile atom and split it, yielding, again, energy and more neutrons. This process is repeated a huge number of times within an atomic explosion, all in an extremely short period. If the mass of fissile material reaches the condition where there are the same number of neutrons present than before the previous 'generation', then the mass can be said to be "critical". Any condition where there are more neutrons present than during the previous fission generation can be said to be "supercritical" and this is what is required for a nuclear detonation.

Critical Assembly

This supercritical mass must be brought together very quickly, otherwise it will be simply blown apart before there have been enough atoms fissioned and before there is any significant release of energy. One method is to fire one piece of material into another. The very first, and unsuccessful, prototype for a nuclear weapon intended to implement this method using plutonium. It was soon realized, however, that this method would only be successful using very highly enriched uranium ... and quite a lot of it. Thus this so called "gun assembly", though simple, is bulky. It was a weapon of this type which destroyed the Japanese city of Hiroshima on August 6, 1945. Smaller, but still bulky gun assembly warheads were in the past tested for use in large US artillery shells, certainly much larger that a suitcase. In regard to suitcase bomb, images that abound on the web showing a gun-type weapon mounted in a suitcase do not accurately reflect just how large such a device would have to be to function

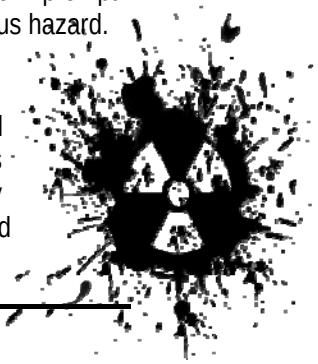
Another method, which works using plutonium, uranium, or a composite of the two, is to compress a mass of fissile material using explosives. In this case, the explosive charges are shaped to focus their energy inwards, in the same way that a glass lens will focus a beam of light. For this reason, the charges are known as explosive lenses. This "implosion assembly" will not actually increase the mass of fissile material present, but will increase its density considerably, allowing it to become supercritical. To aid this, at the center of the fissile mass is a device known as an initiator. The converging shockwaves crush the initiator, bringing quantities of polonium into contact with beryllium. Alpha particles emitted from the polonium liberate a flood of neutrons from the beryllium, helping to initiate the chain reaction. This is how the first nuclear device ever tested worked, and also the device which destroyed the Japanese city of Nagasaki on August 9,1945.

Early examples of both these types of bomb were bulky, though the second type requires less fissile material and with technological progress through the decades, examples have gotten far smaller. The first implosion bombs required a large mechanism to use a discharge of high voltage todetonate 32 or more lenses at exactly the same time. The electronics required to do this, for instance, are far smaller in 2011, or even just prior to 1997 when Lebed's allegations took place, than they were in 1945! Even still, a large quantity of explosives is needed to implode the fissile "core" of a bomb.

In this article from the Nuclear Weapon Archive, Carey Sublette outlined how small these kind of devices may be. He suggested that although it would add to the size of the device, a thin reflector of beryllium would reduce the mass of fissile material needed to produce an explosion, and thus the overall weight. A reflector surrounds the bomb and serves to reflect neutrons back towards its center. Sublette suggests that a fissile mass of around 10.1 kilograms could bring about a nuclear explosion without bulky explosives. The yield from such a bomb would be small; about the same as a few tens of tons of conventional explosive. This is a far cry from the sort of energy which could be liberated from a similar mass of fissile material if there were no size constraints - the device employed against Nagasaki used about 6.2 kilograms of plutonium to yield the equivalent of 22,000 tons of TNT. Such a small yield does not mean that the dangers of this weapon would be trivial as its release of so called "initial" or "prompt" radiation would present a tremendous hazard.

The W54

As it happens, the theoretical device Subltette describes has physical dimensions closely resembling that of a weapon tested



by the United States. This 'W-54"' warhead, in the form of the M388 projectile, formed the heart of a strange weapons system known as the Davy Crocket which was a nuclear recoilless rifle. This man-portable rocket weapon enabled the user to deliver a small nuclear warhead against his enemy. The problem being that the explosion could also potentially deliver a lethal dose of radiation, not only to the enemy but to themselves and any comrades who may be close by! These weapons were actually deployed by US soldiers in the field in Europe during the Cold War, which thankfully never turned hot. The warhead itself was a cylinder of 10.7 x 15.7-inches (27.3 x 40cm).

The SADM

The W-54 device was also made into another form of weapon; the Specialized Atomic Demolitions Munition or SADM. This man portable weapon was intended to be used to destroy structures such as bridges. It was also cylindrical in shape and at 15.7 x 23.6-inches (40 cm x 60 cm), with a weight of 150 lbs (68 kg); it would need to be kept in a rather large suitcase. Details from the former Soviet Union surrounding the type and designation of their nuclear weapons are not readily available in the public domain, though it has been suggested there may have been a similar Soviet device designated as the RA-155. An even more difficult claim to establish is that of Soviet defector Colonel Stanislav Lunev, formally of the GRU, who referred to the alleged missing "suitcase nukes" as being a small nuclear demolitions bomb called the RA-115.

How small can a nuclear device be?

Implosion devices do feature a subtype - those where the fissile mass is not crushed to many times its normal density as it is surrounded by bulky explosive lenses, but reshaped and compressed as it is imbedded in a cylindrical mass of explosives detonated at each end. A football shaped fissile material employed is an alloy of plutonium and gallium which is stable at normal density but needs only a moderate change in density to bring about a shift in its "phase". The amount of fissile material present is in excess of a critical mass when a spherical configuration is achieved and when hollow spaces within the core are collapsed.

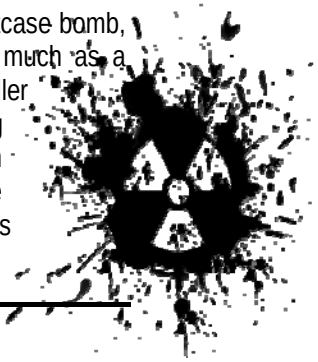
This method of assembling a supercritical mass is known as "two point linear implosion". Using this principle, the United States did develop a device that would fit within a 155 mm artillery shell. This W-48 shell was a cylinder 155mm across and by 846mm long (6.1 x 33.3-inches). Its explosion would have been equal to around 72 tons of TNT, and with it a very dangerous release of initial radiation. If its non-essential bullet-shaped nose cone was not present, and the fusing system was mounted alongside the device, this or similar shells could fit within the 24 x 16 x 8 inch space alleged by Lebed. To bring the device into the kiloton range would require fusion boosting. Here, the tremendous heat and temperature from the nuclear explosion can enable like-charged nuclei of heavy hydrogen isotopes (deuterium and tritium) to fuse together where they would normally push each other part. The result is, again, a release of energy and very high energy neutrons, which go on to strike, and split, fissile atoms. This can be achieved by injecting deuterium and or tritium gas into the fissile core just before the device is detonated, though this gas supply must be replenished and maintained.

However...

These two point linear implosion devices are both very heavy and expensive. The reason is the large quantities of fissile material needed; about 13 kilograms. Various estimates suggest that weapons-grade plutonium costs around $4000 a gram. Admittedly, the price has risen drastically since the end of the Cold War but in any case, any missing nuclear device using the two point linear implosion assembly probably has a salvage price high enough to make it very unlikely that such a weapon would remain intact for terrorist use. Also even taking into consideration the rise in price of fissile material, it seems difficult to believe the Russian government, in the Soviet era or afterwards, would lose track of something not only so dangerous but so valuable!

Hard to believe, harder to prove

The closest actual weapon to a suitcase bomb, U.S SADM, at 68kg, weighed as much as a small adult. Though even smaller devices have been developed using the two point linear explosion principle, the sheer cost of the fissile material required likely rules



out that such devices would be allowed to go missing. In any case, a nuclear bomb could not just be hidden for many years until used; they require continual maintenance and upkeep. Even *if* these devices exist outside of governmental control, they are unlikely to have remained serviceable, though the material they contained could perhaps be put to ill-use.

Thankfully, the claims of Aleksander Lebed and Stanislav Lunev seem rather exaggerated and are likely to be in the realm of myth. Sometimes people exaggerate, or are genuinely mistaken, but the claims of these two men appear to be the only "evidence" supporting the notion of missing suitcase nukes. In a world where you can't trust former members high ranking members of the Soviet military and GRU defectors, who can you trust? One thing is certain; we cannot ask Lebed, who died when a Russian helicopter in which he was flying as a passenger crashed in 2002.

Iran plans one-kiloton underground nuclear test in 2012

Source: http://www.debka.com/article/21635/

According to debkafile's Iranian sources, Tehran is preparing an underground test of a one-kiloton nuclear device during 2012, much like the test carried out by North Korea in 2006. Underground facilities are under construction in great secrecy behind the noise and fury raised by the start of advanced uranium enrichment at Iran's fortified, subterranean Fordo site near Qom.

All the sanctions imposed so far for halting Iran's progress toward a nuclear weapon have had the reverse effect, stimulating rather than cooling its eagerness to acquire a bomb.

Yet, according to a scenario prepared by the Institute for National Security Studies (INSS) at Tel Aviv University for the day after an Iranian nuclear weapons test, Israel was resigned to a nuclear Iran and the US would offer Israel a defense pact while urging Israel not to retaliate.

As quoted by the London *Times* Monday, Jan. 1, INSS experts, headed by Gen. (ret.) Giora Eiland, a former head of Israel's National Security Council, deduced from a simulation study they staged last week that. Their conclusion is that neither the US nor Israel will use force to stop Iran's first nuclear test which they predicted would take place in January 2013.

Our Iranian sources stress, however, that Tehran does not intend to wait for the next swearing-in of a US president in January 2013, whether Barack Obama is returned for a second term or replaced by a Republican figure, before moving on to a nuclear test.

Iran's Islamist rulers have come to the conclusion from the Bush and Obama presidencies that America is a paper tiger and sure to shrink from attacking their nuclear program – especially while the West is sunk in profound economic distress.

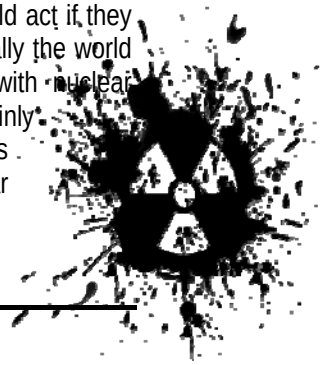
debkafile's sources stress that both Tehran and the INSS are wrong: The Tel Aviv scenario is the work of a faction of retired Israeli security and intelligence bigwigs who, anxious to pull the Netanyahu government back from direct action against the Islamic Republic, have been lobbying for the proposition that Israel can live with a nuclear-armed Iran.

Our Washington sources confirm, however, that President Obama considers the risk of permitting a nuclear-armed Iran to be greater than the risks of military action.

Monday, Jan. 9, top administration officials said that developing a nuclear weapon would cross a red line and precipitate a US strike. US Defense Secretary Leon Panetta: "If Iran takes the step to develop a nuclear weapon or blocking the Strait of Hormuz, they're going to be stopped." He was repeating the warnings of the past month made by himself and Chairman of the Joint US Chiefs of Staff. Gen. Martin Dempsey.

As for Israel, Dennis Ross, until recently senior adviser to President Obama, reiterated in a Bloomberg interview on Jan. 10: "No one should doubt that President Barack Obama is prepared to use military force to prevent Iran from acquiring a nuclear weapon if sanctions and diplomacy fail."

As for Israel, Ross said: "I wouldn't discount the possibility that the Israelis would act if they came to the conclusion that basically the world was prepared to live with Iran with nuclear weapons," he said. "They certainly have the capability by themselves to set back the Iranian nuclear program."



Israel's media screens and front pages are dominated these days by short-lived, parochial political sensations and devote few words to serious discourse on such weighty issues as Iran's nuclear threat.

This is a luxury that the US president cannot afford in an election year. Iran's acquisition of a nuclear bomb and conduct of a nuclear test would hurt his chances of a second term. The race is therefore on for an American strike to beat Iran's nuclear end game before the November 2012 presidential vote.

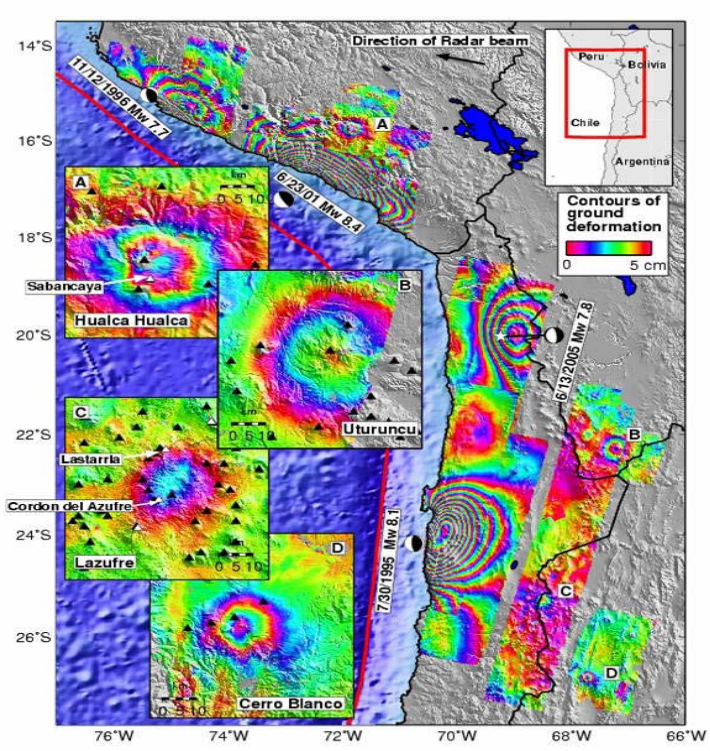
The INSS have also wrongly assessed Russia's response to an Iranian nuclear test as "to seek an alliance with the US to prevent nuclear proliferation in the region."

This fails to take into account that Prime Minister Vladimir Putin, running himself for a third term as president in March, has already committed Moscow to a new Middle East policy which hinges on support for a nuclear Iran and any other Middle East nation seeking a nuclear program. This is part of Russia's determined plan to trump America's Arab Spring card.

Satellite imagery detects thermal 'uplift' signal of underground nuclear tests

Source:http://esciencenews.com/articles/2012/01/10/satellite.imagery.detects.thermal.uplift.signal.underground.nuclear.tests

A new analysis of satellite data from the late 1990s documents for the first time the "uplift" of ground above a site of underground nuclear testing, providing researchers a potential new tool for analyzing the strength of detonation. The study has just been published in *Geophysical Research Letters.*



Lead author Paul Vincent, a geophysicist at Oregon State University, cautions that the findings won't lead to dramatic new ability to detect secret nuclear explosions because of the time lag between the test and the uplift signature, as well as geophysical requirements of the underlying terrain. However, he said, it does "provide another forensic tool for evaluation, especially for the potential explosive yield estimates."

InSAR image

"In the past, satellites have been used to look at surface subsidence as a signal for nuclear testing," said Vincent, an associate professor in OSU's College of Earth, Ocean, and Atmospheric Sciences. "This is the first time uplift of the ground has correlated to a nuclear test site. The conditions have to be just right and this won't work in every location.

"But it is rather interesting," he added. "It took four years for the source of the uplift signal -- a thermal groundwater plume -- to reach the surface."

The focus of the study was Lop Nor, a nuclear testing site in China where three tests were conducted -- May 21, 1992; May 15, 1995; and Aug. 17, 1995. Vincent and his colleagues analyzed interferometric synthetic aperture radar (InSAR) images from 1996-99 and detected a change in the surface beginning four years after the tests.

Though the uplift was less than two inches, it corresponds to known surface locations above past tests within the Lop Nor test site.

From past studies, the researchers knew that heat from underground detonation of nuclear devices propagates slowly toward the surface. At most sites -- including the Nevada National Security Site -- that heat signal dissipates laterally

when it reaches the water table, which is usually deep beneath the surface.
At Lop Nor, however, the water table is only about three meters below the surface, and the heated groundwater plume took four years to reach that high, lifting the ground above the detonation site slightly -- but enough to be detected through InSAR images.
Lop Nor also is characterized by a hard granite subsurface, which helps pipe the heated water vertically and prevents the subsidence frequently found at other testing sites.
A past study by Vincent, published in 2003, first shed light on how subsidence can manifest itself in different ways -- from the force of the explosion creating a crater, to more subtle effects of "chimneying," in which the blast opens up a chimney of sorts and draws material downward, creating a dimple at the ground surface.

Before joining the OSU faculty in 2007, Vincent spent several years as a physicist at the Lawrence Livermore National Laboratory.
Vincent said the analysis of nuclear explosions has become a specialized field. Seismology technology can provide an initial estimate of the energy of the explosion, but that data is only good if the seismic waves accurately reflect coupling to the connecting ground in a natural way, he explained. Efforts are sometimes made to "decouple" the explosive device from the ground by creating specializing testing chambers that can give off a false signal, potentially masking the true power of a test.
"Subsidence data combined with seismic data have helped narrow the margin of error in estimating the explosive yield," Vincent noted, "and now there is the potential to use test-related thermal expansion as another forensic tool."

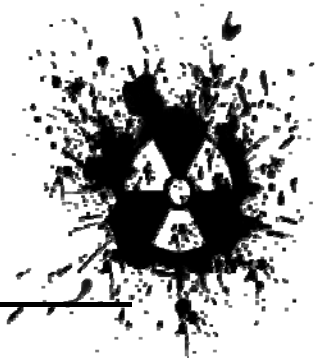
Co-authors on the paper with Vincent include Sean Buckley of the Jet Propulsion Laboratory, Dochul Yang, the University of Texas-Austin, and Steve Carle, of Lawrence Livermore National Laboratory.

Iran and the undeclared campaign

By Frank Gardner (BBC security correspondent)
Source: http://www.bbc.co.uk/news/world-middle-east-16513186

The assassination on Wednesday of another Iranian nuclear scientist may now prompt Iran to try to respond in kind.
The murder in Tehran of Mostafa Ahmadi-Roshan is the fourth such attack on Iran's scientists in just two years.
It comes on top of a sophisticated cyber sabotage programme and two mysterious explosions at Iranian military bases, one of which in November killed the general known as 'the godfather' of Iran's ballistic missile programme.
No-one is claiming responsibility for these attacks but Iran blames its longstanding enemy, Israel, and occasionally the US.
Whoever is behind them, Iran is clearly being subjected to an undeclared campaign to slow down its nuclear programme, which the West and Israel suspect is aimed at developing an atomic bomb.
The latest Iranian scientist to die was killed by a magnetic bomb, attached to his car, a Peugeot 405, by two men on a motorbike.
Whoever was targeting him clearly knew his route, his car and his timings.
The small, professionally made device was designed to kill its victim but cause only limited damage to the surroundings.
It bears a striking similarity to the bomb used in November 2010 to kill another nuclear scientist, Majid Shahriari.
A motorbike bomb killed a physics professor earlier that year and another device narrowly missed killing the man tipped to be the next head of Iran's Atomic Energy Organisation.

'Decapitation strategy'



Mostafa Ahmadi-Roshan, who was killed on Wednesday, was both a university lecturer and a senior supervisor at the Natanz uranium enrichment facility.

In such a secretive country as Iran it is hard to determine how much difference, if any, his death will make to the accelerating nuclear programme which experts in the West believe may now have overcome many of the earlier obstacles to building a bomb.

"It's conceivable it could have an impact on retarding the programme", says Mark Fitzpatrick, an expert on nuclear proliferation at the International Institute for Strategic Studies (IISS) in London.

"There are a few key technical areas that Iran has not yet mastered... so a decapitation strategy is an effective measure for retarding this process. But it may be that Iran is beyond this point".

So who is behind this undeclared campaign?

No-one is putting their hand up, but Israel has made no secret of its delight at any setbacks to Iran's nuclear programme, which it fears may

soon become a threat to its existence.

In the past its officials have either denied any part in the attacks or refused to comment. But Israel's overseas intelligence agency Mossad is believed to have one of the best networks of informants and operatives in the Middle East.

In 2011 an Iranian confessed to being recruited by Mossad to assassinate a scientist earlier in the year, although coerced confessions are commonplace in Iran.

The Stuxnet computer virus, stealthily introduced into Iran's nuclear programme in 2009 and which wreaked temporary damage on its centrifuges, is believed to be the work of US, Israeli and possibly British cyber experts.

Retaliation?

So far, Iran has not responded to these attacks, other than loudly condemning them and vowing to continue its nuclear programme.

But this latest killing could prove to be the proverbial straw on the camel's back, prompting Iran's powerful intelligence agency Etilaat and Revolutionary Guards Quds force to carry out some attacks of their own overseas.

If they wanted to retaliate against the US they certainly have enough operatives in Iraq and Afghanistan to make life difficult for the Americans there.

Striking out at Israel's nuclear scientists would be harder - they are said to be well guarded and Israeli intelligence has been bracing for some kind of Iranian reaction.

Sir Richard Dalton, Britain's Ambassador to Iran from 2002 to 2006 and now an associate fellow at the UK think tank, Chatham House, believes the undeclared campaign against Iran's nuclear scientists is entering a dangerous phase.

"The next step is for Iran to answer like for like" says Dalton.

"If a state is behind this then this is international state terrorism and it's inviting a response. It looks like a further twist that will lead to a tit-for-tat".

Attacks on Iranian scientists

Jan 2012 - Mostafa Ahmadi Roshan, a professor at the Technical University of Tehran, died after bomb was placed on his car by a motorcyclist

Nov 2010 - Majid Shahriari, member of nuclear engineering faculty at Shahid Beheshti University, killed in Tehran after bomb attached to his car by motorcyclist in Tehran. Another scientist, Fereydoon Abbasi Davani - future head of the Atomic Energy Organisation of Iran - is hurt in a separate attack

Jan 2010 - Massoud Ali Mohammadi, a physics professor, died when a motorcycle rigged with explosives exploded near his car

North Korea from 30,000 feet

By Niko Milonopoulos, Siegfried S. Hecker, and Robert Carlin
Source: http://www.thebulletin.org/web-edition/features/north-korea-30000-feet

The first publicly available overhead imagery that suggested North Korea was constructing a new nuclear reactor at its Yongbyon complex appeared on November 4, 2010. Charles L. Pritchard, a former special envoy for negotiations with North Korea and the president of the Korea Economic Institute, along with a delegation from the institute provided the first confirmation of this construction after a visit to Yongbyon that week. The following week, Yongbyon officials told Stanford University's John W. Lewis and two authors of this article (Hecker and Carlin) that the reactor was designed to be an experimental pressurized light water reactor (100 megawatts thermal, or 25-30 megawatts electric) to be fueled with low-enriched uranium fuel produced in a newly constructed centrifuge plant at the nearby Yongbyon fuel fabrication plant. The new reactor is being constructed on the former site of a cooling tower for a now-disabled, 5-megawatt electric, gas-cooled, graphite-moderated reactor that had been used to produce plutonium; the tower was demolished in 2008 as a step toward an eventual denuclearization agreement. The Yongbyon construction site that Pritchard, Hecker, Carlin, and Lewis saw was essentially at the stage of development captured in the overhead image in Figure 1. The foundation slab had been poured, and the steel-reinforced concrete containment structure was about one meter high, on its way to a final height of 40 meters. Additional excavation was visible along with the construction of several new buildings that looked like storage sheds.
Figure 1

Overhead image that provided the first evidence of the construction of a new reactor at the Yongbyon nuclear complex.

Overhead imagery tracks construction progress during the past year -- from September 26, 2010, to November 3, 2011 -- as shown in Figure 2. Early images indicated that the construction of this new light water reactor began in late September 2010, near the site of the destroyed cooling tower.

Figure 2

A time sequence of overhead images of the light water reactor site tracking its development from September 2010 to November 2011.

The images show the rapid rate of construction of the reactor's exterior, including the development of the reactor containment structure and the adjacent turbine generator hall. As the photos indicate, not much progress was made between December 2010 and April 2011, likely because of the harsh North Korean winter.

The September 23, 2011, annotated image shown in Figure 3 demonstrates that much has been done since May. The dashed lines represent underground cooling pipes running from a newly constructed pump house to the Kuryong River (as seen in a May 22 overhead not shown here). The reactor building containment dome is partially complete, and construction has begun on the turbine generator hall. Construction trucks can be seen in the right-hand corner of the image. On the north side of the reactor is the skeleton of a structure for transferring equipment into the reactor hall during annual maintenance outages.

Figure 3

Annotated diagram of the new reactor site, shown in a photo indicating significant progress in construction.

The latest available close-up overhead image, taken on November 14, 2011 (Figure 4), shows that many of the reactor's external components are almost complete. Much progress has been made on the turbine generator hall; a traveling crane rail is already visible. The

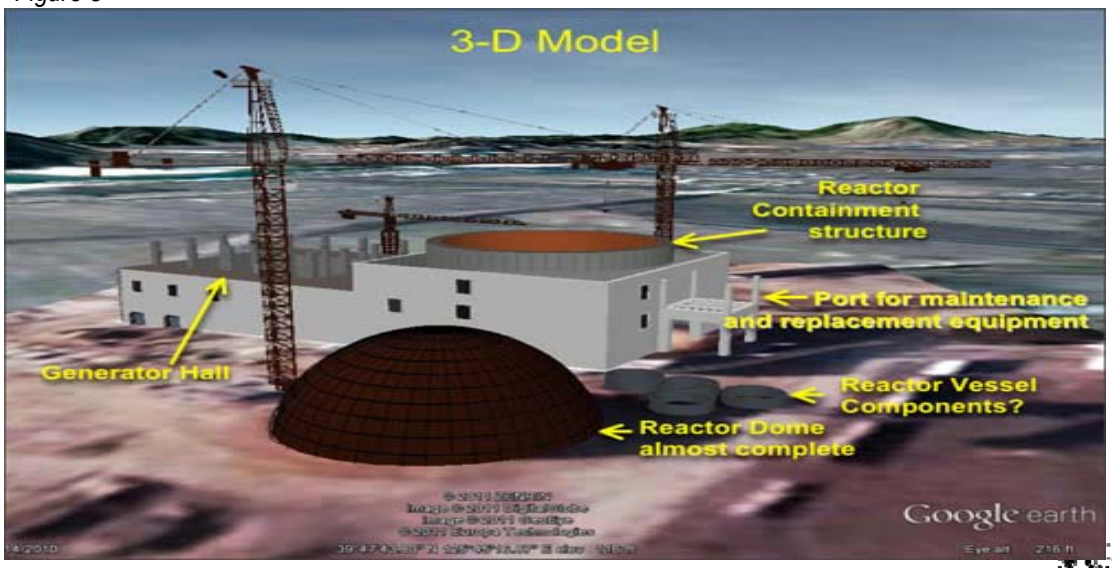
structure of the turbine pedestal inside the turbine building is already apparent. This is significant; it indicates that North Korea has a turbine design and possibly the ability to manufacture a turbine generator set that will fit within the dimensions of the turbine pedestal now under construction. The reactor building containment dome on the east side of the reactor's containment structure is complete and will be placed on top of the containment structure once the large internal components of the reactor's core have been inserted. For the first time, we see the appearance of small cylindrical components near the dome; these are likely parts of the pressure vessel that will go inside the containment structure.

Figure 4

Close-up overhead image of the new reactor site. This is the mostup-to-date image publicly available.

Using overhead images from Figure 4, we constructed a 3-D model (Figure 5) of the light water reactor using the open-source program Google Sketchup. Based on the model, it is obvious that the reactor's exterior is almost complete. The model also provides perspective on the size of the reactor, which will be 40 meters tall when completed and stretch 20 meters in diameter.

Figure 5



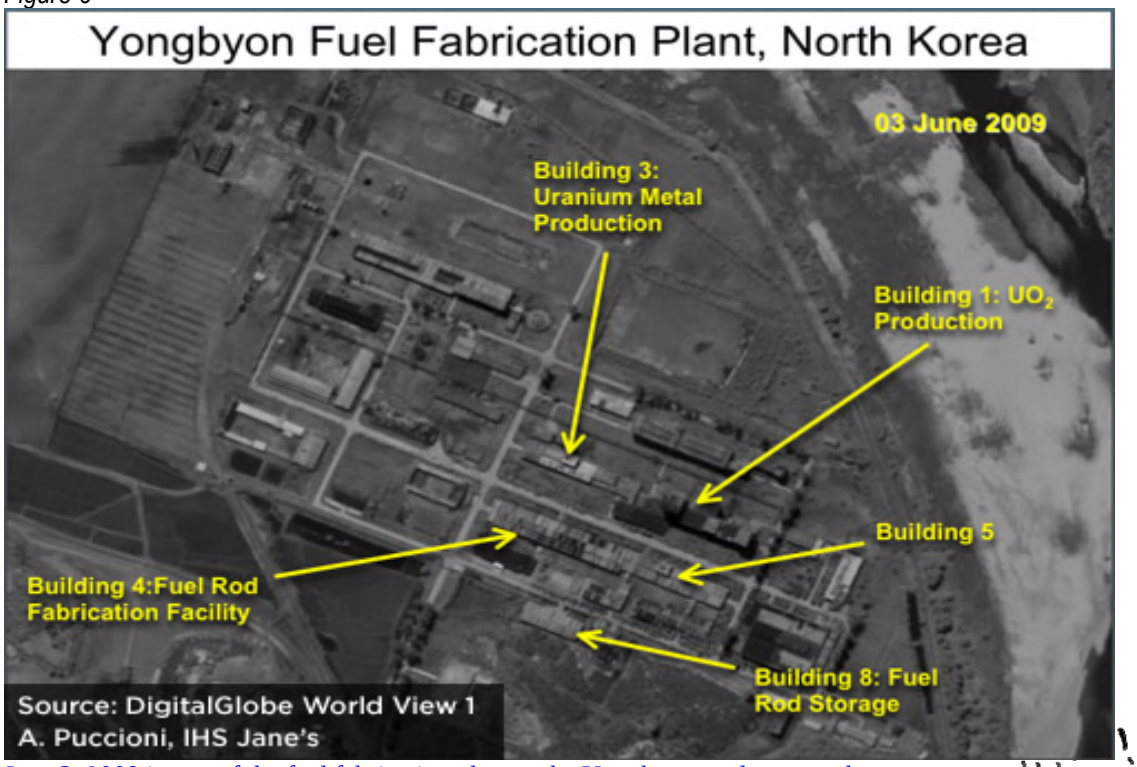
Three-dimensional model of the light water reactor based on the latest satellite images.

Our analysis confirms Pyongyang's plan to use this experimental reactor for electricity production. The rapid progress of construction also demonstrates that North Korea still has impressive manufacturing capabilities, in spite of the last two decades of economic downturn. However, we view this progress with alarm. Was the seismic analysis of the reactor site sufficiently rigorous? Did the regulatory authorities have the skills and independence required to license this reactor in such a short time period? And do Yongbyon specialists have sufficient experience with the very demanding materials requirements for the internal reactor components, including the pressure vessel, steam generator, piping, and fuel-cladding materials?

Although the North Koreans have constructed the outside of the reactor buildings at an impressive rate, we do not believe the reactor will be operational by the originally stated completion date in 2012. Analysis of overhead images shows the North Koreans are almost done with the easy part of constructing a reactor -- the civil engineering work. Constructing and assembling the internal components of a pressurized water reactor are extremely difficult processes, successfully mastered by only a few technically advanced countries. The mechanical and electrical scope of the reactor's construction are only starting, however, and those phases of the construction process will likely require at least two additional years.

The uranium enrichment centrifuge plant. Since Hecker, Carlin, and Lewis visited the newly constructed uranium enrichment plant in Yongbyon on November 12, 2010, as far as we know no foreigners have been given access to the facility. Our requests for a return visit have so far been denied. By tracking the construction of the Yongbyon centrifuge plant via overhead photography, however, we have concluded that North Korea must also have an undisclosed, pilot-scale centrifuge plant. Figure 6 shows the fuel fabrication plant as it existed in June 2009, only a few months after Pyongyang announced it would construct a pilot light water reactor and produce low-enriched uranium to power it. (The North Koreans previously denied having a uranium enrichment program.) Building 4, the fuel rod fabrication building, which housed the centrifuge plant we visited, looks the same as when the International Atomic Energy Agency inspectors were expelled in April 2009.

Figure 6



June 3, 2009 image of the fuel fabrication plant at the Yongbyon nuclear complex.

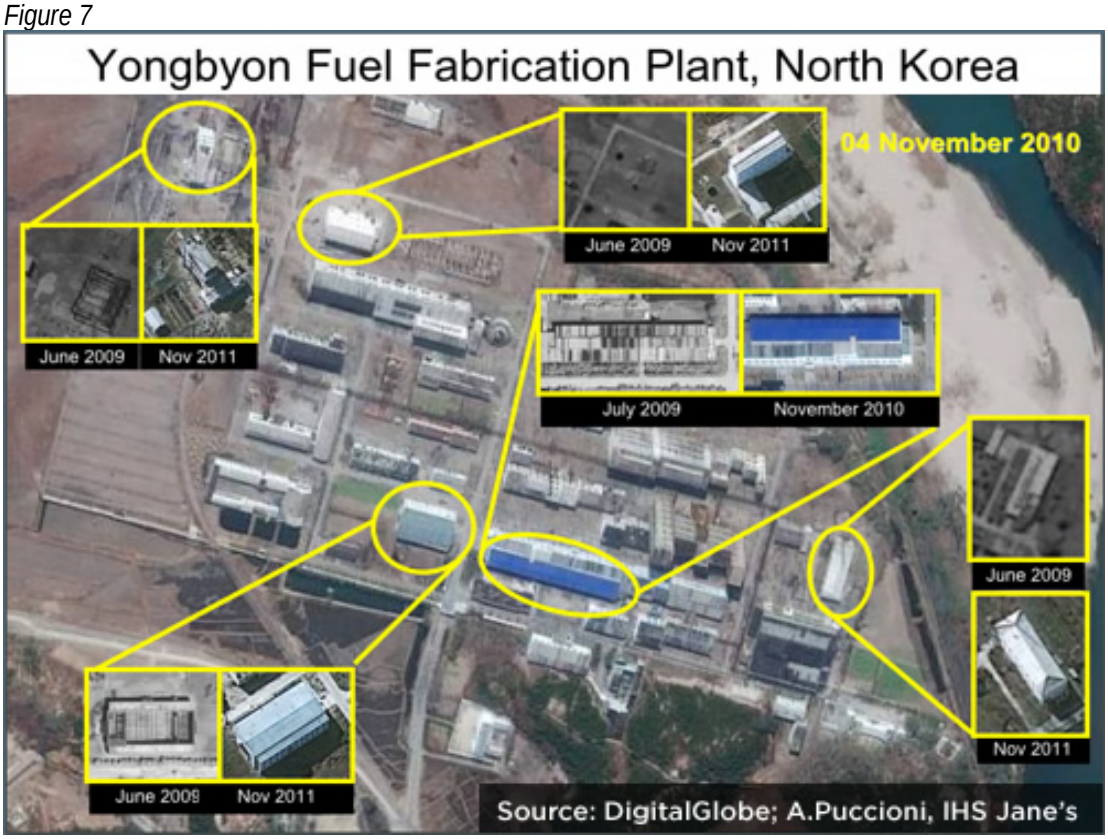
On September 4, 2009, however, North Korea's permanent representative to the United Nations announced that his country's "experimental uranium enrichment has successfully been conducted to enter into completion phase." This success must have been achieved at a different facility, because Building 4 could not have been readied in time. To house the

2,000 centrifuges we saw, the building was totally gutted and retrofitted with a clean, modern heating and air conditioning system; the exterior was refurbished and covered with a new blue metal roof. Moreover, we were told in November 2010 that the facility became operational only days before our arrival.

The fuel fabrication facility also had to be reworked and expanded to support the centrifuge plant. The now-disabled 5-megawatt electric reactor used uranium alloy metal fuel rods, which required the ability to convert uranium oxide to uranium tetrafluoride, which is in turn converted to uranium metal for the fuel. During the Agreed Framework's freeze on nuclear activity, however, the hydrofluorination equipment for making uranium tetrafluoride corroded, and the building housing that equipment was abandoned. During the November 2010 visit, the chief process engineer told us that the North Koreans had replaced the old aqueous process for making uranium tetrafluouride with a new anhydrous process. He also said that they have installed fluorination equipment to turn uranium tetrafluoride into uranium hexafluoride, which is used as the feed gas for the centrifuges.

The overhead images in Figure 7 show that a number of buildings at the fuel fabrication plant were either retrofitted or newly constructed between June 2009 and November 2011. The building with the blue roof, Building 4, houses the centrifuge plant; the one on the lower left is believed to be a recreational building.

Figure 7

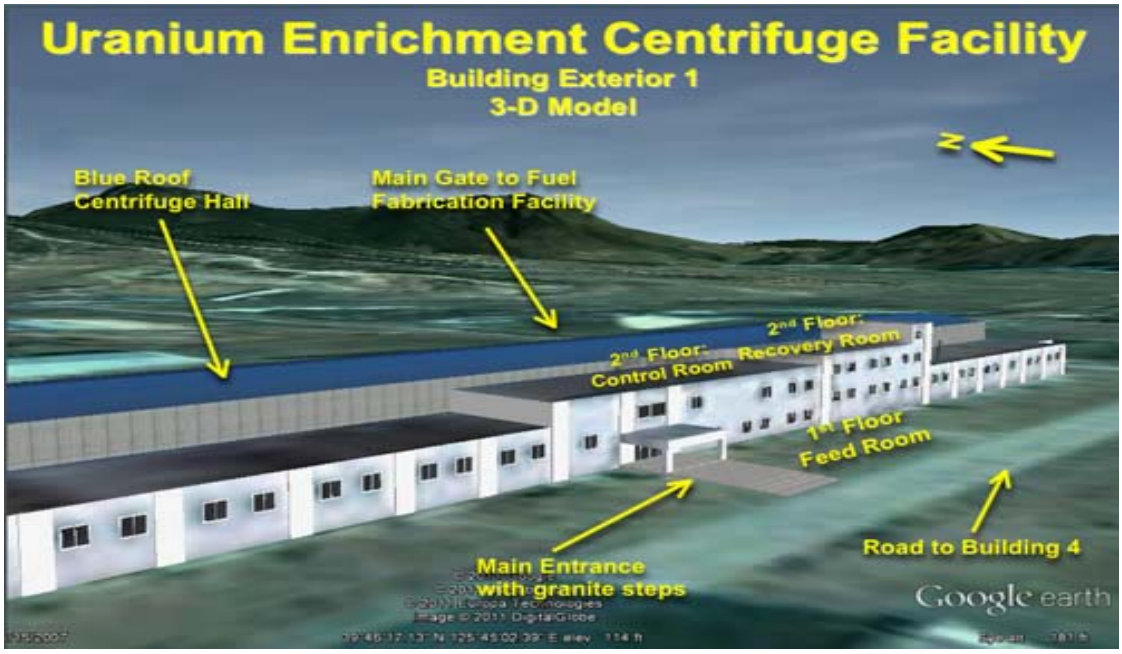


The fuel fabrication plant in November 2010, with annotations identifying newly constructed buildings on the site between June 2009 and November 2011.

We are not certain what the other buildings contain, but equipment had to be housed for uranium tetrafluoride and uranium hexafluoride production, and an entirely new set of equipment had to be installed to make uranium oxide fuel pellets for the light water reactor. In addition, either zircaloy tubing or stainless steel tubing must be produced to clad the light water reactor fuel and fuel assemblies, which are very different from those previously used at Yongbyon.

Based on overhead-imagery analysis and our recollection of Building 4, we constructed the 3-D model of the centrifuge building shown in Figure 8. We have also labeled where the centrifuge hall, the control room, the recovery room, and the feed room are located within the building.

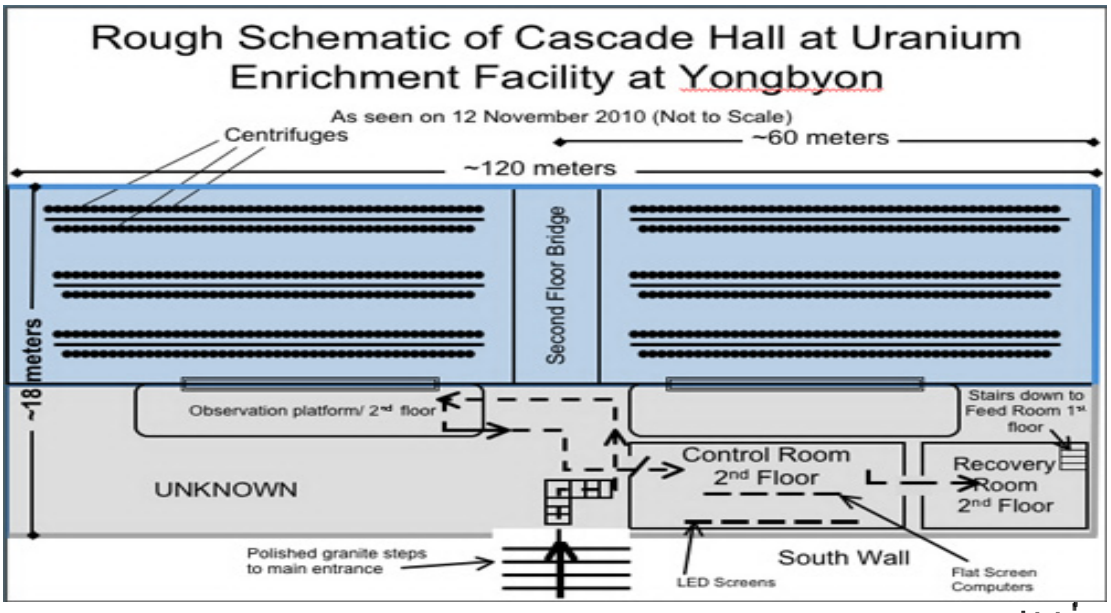
Figure 8



Three-dimensional model of Building 4 (the new uranium enrichment centrifuge plant) in the fuel fabrication plant, created using the latest satellite images.

Figure 9 is a rough schematic of the interior layout of the building. In the November 2010 visit, we observed approximately 2,000 centrifuges, divided into six cascades, from the second-floor observation platform identified in the diagram. Unless Pyongyang allows access to this facility, however, the world will not know if it is fully operational -- nor will the world know much about the sophistication of other undisclosed facilities.

Figure 9



A rough schematic of the floor plan for the cascade hall at the uranium enrichment centrifuge facility (Building 4) in Yongbyon, as of Nov. 12, 2010.

How will Kim Jong-il's death influence Pyongyang's nuclear calculus? Though probably less cataclysmic than some observers anticipated, the death of leader Kim Jong-il in December has introduced new uncertainties into the North Korean picture. There have been notable continuities in Pyongyang's perspective and basic policies over the past 50 years, and we expect those to remain in place. For example, the North has always seen itself as besieged on all sides, without permanent, trustworthy allies. That has made it suspicious of foreign advice and highly resistant to outside blandishments. With young Kim Jong-un at the helm, Pyongyang may be more susceptible to both external and internal developments. Nevertheless, without significant change in the external security environment -- probably much more change than either Seoul or Washington can deliver -- we would expect the North to remain a tough customer to deal with.

Perhaps the greatest challenge at the moment is to divine how internal dynamics during the political succession -- even one well-scripted and moving apace, as the North's seems to be -- might nudge national security decisions one way or the other. In the case of the nuclear issues, the boundaries that we once thought we understood have now become harder to discern. One concern is that the likelihood of nuclear or missile tests over the next year may have grown.

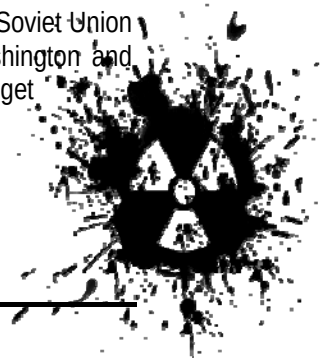
During an October 2010 military parade, Pyongyang displayed a new class of road-mobile, intermediate-range ballistic missiles: the so-called "Musudan," capable of being armed with a nuclear payload and with an estimated range of up to 3,000 kilometers. The Musudan is derived from the Soviet 1968 submarine-launched SS-N-6 missile. Although it has not been flight-tested, the Musudan would represent a major escalation of North Korea's nuclear threat if Pyongyang is able to build a miniaturized nuclear warhead to fit it -- a feat that we believe cannot be accomplished with confidence without at least one additional nuclear test.

Kim Jong-il's apparent attempts to avoid crisis, preserve "stability," and support the then-envisioned succession process has been overtaken by his mortality. In the current leadership circumstances, Pyongyang's definition of stability might be quite different. Certainly, the North's early media commentaries in the wake of Kim's death highlighted as one of his signal accomplishments the country's becoming a nuclear weapons state -- a not unexpected emphasis, but not a hopeful signal, nevertheless. (In contrast, after the transition from Kim Il-sung to Kim Jong-il, the North repeatedly maintained that denuclearization of the Korean Peninsula was one of Kim Il-sung's deathbed wishes.)

Further complicating the picture is the North's long-term fixation on light water reactors as a solution to its severe energy problem. Pyongyang's goal of energy independence and security, which is married to the notion that a nuclear power industry is a potent political symbol, may not be something that Kim Jong-un is willing to abandon. Unless that idea is either broken or an alternative is supplied (something other than heavy fuel oil, which has become a tattered Band-Aid), the nuclear energy issue will probably remain unresolved. The United States should not challenge Pyongyang's right to have nuclear electricity but instead provide a more pragmatic energy solution.

When the Korean Peninsula Energy Development Organization (KEDO) still existed and was confidentially reviewing options other than nuclear power with Pyongyang, the most promising substitute was natural gas power plants. (The KEDO organization was established as part of the Agreed Framework to provide North Korea with two modern light water reactors, but it was effectively terminated in 2002 after the Bush administration accused Pyongyang of cheating on the agreement.) The problem, of course, was that the North had no infrastructure to handle -- much less access to a supply of -- natural gas. Recent Russian-South Korean-North Korean consideration of a Russian pipeline might provide new opportunities to revisit the issue.

On the upside, diminution of what Pyongyang perceives as an external threat could provide circumstances in which the new leadership might entertain bolder moves -- further encouraging tension reduction and experimenting with new approaches on the economic front. For years, the Chinese have advised Washington that even Deng Xiaoping could not have moved ahead with his economic reform program if he had not first been able to reduce the external threats Beijing feared from the Soviet Union and the United States. By encouraging improvements in the security environment, Washington and Seoul could possibly set in motion a series of mutually reinforcing steps that would finally get at legitimate US concerns about both the North's nuclear weapon and missile programs.



The authors wish to thank Dr. Chaim Braun, Stanford University, and Allison Puccioni, IHS Jane's*, for their valuable input.*

Interpol chief: No specific intelligence 2012 Olympics will be targeted

Source: http://www.washingtonpost.com/world/europe/interpol-chief-in-london-for-talks-after-reports-that-european-nations-failing-passport-checks/2012/01/19/gIQA7Zj59P_story.html

Interpol's chief sounded an alarm Thursday that countries are still failing to check identity documents against its database — a warning that comes just months before the 2012 Olympics.

Ron Noble, secretary-general of the

international police agency based in France, said out of the 1.1 billion travelers last year, ID documents of about 500 million people were not checked against Interpol's database, which is one of the world's most detailed.

"It will take a tragedy — a specific kind of tragedy — for behavior to change," Noble told The Associated Press after speaking to foreign correspondents in London.

Noble has said Britain is the only EU country to systematically check passports against those registered with Interpol as missing worldwide. Britain carried out 140 million checks last year against the database — more than the rest of Europe combined.

Last year, he said more than 11,000 people were caught trying to enter the U.K. using lost or stolen passports.

France carried out the second-highest number of checks at 10 million.

A special Interpol team will be sent specifically for the Olympics, helping British authorities determine whether anyone trying to enter the U.K. is wanted, whether their documents have been listed as lost or stolen and whether they are considered a threat.

He said the team will be smaller than the one Interpol sent to South Africa for the 2010 World Cup — an event where teams were at border crossings and airports.

"We know terrorists use fraudulent ID documents," Noble said.

The U.K. Border Agency faced intense criticism last year after passport checks were relaxed during the height of the summer tourist season to lessen lines at London's Heathrow Airport, Europe's busiest. A government report on Thursday blamed poor communications, a lack of supervision and other shortcomings for the problems.

Olympics security has been a primary concern since 1972, when 11 Israeli athletes and coaches were killed at the Munich Games.

Noble said while there was no specific intelligence that the games would be targeted, such events provide an array of opportunities for criminals, including pickpocketing, forced prostitution, illegal Internet betting rings and hoaxes.

And then there is still the threat of terrorism. Noble said while al-Qaida's ranks had been depleted, affiliates were actively recruiting in places like Somalia.

Another fear that Noble said "keeps him up at night" is the threat of a nuclear or biological attack. Interpol has been alerted to some 2,715 instances where there were questions of whether there had been illicit trafficking of nuclear material.

Noble stressed, however, that didn't mean there were more 2,000 cases of trafficked nuclear material.

While most of the cases involved non-nuclear radioactive material cases — 2,535 — there were 200 cases involving nuclear material. Only four cases involved the attempted sale of highly enriched uranium, Noble said.

The U.S., he said, had the most cases in the database — mostly because of its reporting through the U.S. Nuclear Regulatory Council. After that, Eastern Europe has had the most and some of the most significant cases of concern in terms of criminality, Noble said.

As for whether terror groups were becoming more capable of unleashing biological attacks, Noble pointed to advances in both technology and biotechnology. He said the risk was increasing — partially because technology can be misused — but that did not mean there was an increased likelihood of a bio-terrorist attack.
"It's so easy to think about how an attack can be carried out because the screening of passengers doesn't focus on that at all," Noble said. "That's why it's important to identify people who are engaged in conduct that is suspicious or illegal."
Noble is American and a former head of the U.S. Secret Service. Interpol is based in Lyon, France.

Nuclear material stolen from Egyptian nuclear power plant site

Source: http://www.globalpost.com/dispatch/news/regions/middle-east/egypt/120119/nuclear-material-stolen-egyptian-nuclear-power-plant-

Dabaa, the coastal town where Egypt's first nuclear power plant is under construction, saw clashes last week between government forces and locals angry over loss of land to the project.

Egypt reported that radioactive material was stolen from the site a nuclear power plant on its northern coast, according to Reuters.
The plant, which is unfinished and would be Egypt's first nuclear power plant, is located in a town called Dabaa and is west of Alexandria on the Mediterranean Sea. Protesters have been demanding the plant be relocated because they have lost land to the project. But the sit-ins escalated on January 13 and government security forces clashed with demonstrators.
Reuters reported: "Soldiers and the protesters hurled stones at each other and exchanged gunfire after the protesters demolished a wall surrounding the site, a security source and witnesses said."
Egyptian newspaper Al Masry Al Youm reported:
The plant's construction site was looted and vandalized earlier this week, resulting in LE500 million in losses.
There have been conflicting reports regarding the Nuclear Stations Authority committee that went to inspect the site on Thursday in order to assess the damages.
It was rumored that committee members refused to enter the site

upon hearing that safes containing radioactive elements were missing.
However, Electricity Ministry spokesperson Aktham Aboul Ela denied that there were signs of radioactivity. “We found chemicals in two locations, but they are not hazardous,” he said.
Reuters reported that an official from the International Atomic Energy Agency in Vienna said what was stolen were "low-level radioactive sources," but would not elaborate. Egypt has requested assistance in recovering the stolen material.

Radioactive Material Stolen in Egypt

Source: http://www.stratfor.com/analysis/radioactive-material-stolen-egypt

Summary

Calibration devices that may contain radioactive material were reportedly stolen from a contentious nuclear power plant that is under construction Jan. 18 in Dabaa, Egypt. Due to the small amounts of radioactive material that would be in each device, the threat of malicious exposure to radiation is very low, though accidental exposure is a possibility. In fact, given the public discontent over the power plant, it is likely that the thieves do not know what the devices are and only took them as part of a larger theft intended to delay the plant's construction.

Analysis

Egyptian state-run newspaper Al-Ahram on Jan. 19 reported the theft a day earlier of calibration devices that may contain radioactive material from a controversial nuclear power plant under construction in Dabaa, Egypt. The identities of the thieves are unknown, but it is possible that they are local Bedouins, who have been vandalizing and violently protesting against the plant, which is being built on land taken from them without compensation.
If the stolen devices do contain radioactive material, that material could be extremely dangerous, but it is unlikely that the thieves even know what they possess. The radioactive devices were likely just part of a larger theft intended to delay the plant's construction. For this reason and others, the threat of malicious radiation exposure is very low. Instead, the greater risk is from accidental exposure.
It is still unclear what the stolen devices actually were. An unnamed source at the International Atomic Energy Agency (IAEA) reported Jan. 19 that tools used to calibrate measuring devices were stolen from the nuclear power plant in Dabaa. Subsequently, an official IAEA statement said the stolen items were "low-level radioactive sources." A statement from Egypt's Atomic Energy Agency and Ministry of Electricity and Energy, which certainly would have an incentive to downplay the incident's significance, indicated that the stolen devices were used to calibrate monitoring stations that track the amount of radioactivity at the site. Based on these statements, it is possible that the stolen devices calibrated radiation detection devices at monitoring stations.
Officials have not identified the radioactive material in the stolen devices, but it could be cesium-137. Radiation detection devices need to be calibrated at regular intervals, and cesium-137 is typically used as the radioactive source during calibration. It appears in amounts of less than 1 milligram in these devices, which gives off much less than 1 curie of radiation, the amount at which the device would require special handling.
But even at that amount, cesium-137 is an extremely dangerous isotope. It emits both gamma rays and beta particles, making it difficult and dangerous to handle, and it has a half-life of 30 years, which extends the time that exposure would be dangerous. In addition to the threat of radiation poisoning and potential carcinogenic effects, cesium-137 also is dangerous because it can mimic potassium, making it easily absorbed by the body, where it can interfere with basic biological processes.
The number of devices stolen has not been released, so it is impossible to know the exact amount of radioactive material the thieves possess. However, the amount is likely

extremely small. Consequently, if the material itself were sought for criminal use, it would most likely only be useful to poison a targeted individual. Radioactive isotopes have been used as a method of poisoning before. For example, former Soviet and Russian intelligence officer Alexander Litvinenko was killed by exposure to polonium-210 in the United Kingdom in 2006.

The greatest potential threat to the broader populace lies in accidental exposure after improper disposal of the devices containing radioactive material. In 1987, 1,000 Brazilians were exposed to radioactivity when cesium chloride was removed from salvaged medical equipment. Two hundred forty-four people showed significant exposure and four died as a result. In 2010, eight people in India were hospitalized due to exposure to cobalt-60, another radioactive isotope, after an unidentified object was dismantled at a scrap shop. No deaths resulted from the incident.

If cesium-137 was in fact the material in the stolen devices, the overall risk for exposure is low. The radioactive material would be securely contained within the devices and would need to be removed, either by brute force or a systematic dismantling of the device. Additionally, each device contains such a small amount of the radioactive material that the yield from each device would need to be combined in order to produce an amount of any significance. That requires knowledge of the purpose of the devices.

This is knowledge that the thieves probably do not have. In addition to participating in violent clashes that have killed two people and injured at least 41 over the past week in Dabaa, Bedouins have damaged an estimated 500 million Egyptian pounds (about $83 million) worth of machinery at the nuclear power plant and stolen several computers, cables, furniture and transformers from it. The calibration devices may have been another item these Bedouins took, not knowing they contain radioactive material.

Nuclear Terrorism: A Rationale Choice For Terrorists? – Analysis

By Muhammad Jawad Hashmi

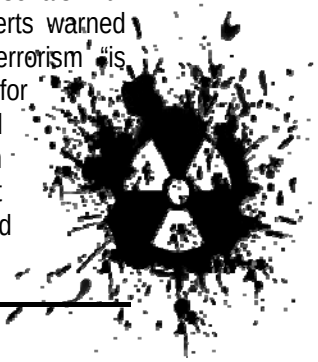
Source: http://www.eurasiareview.com/26012012-nuclear-terrorism-a-rationale-choice-for-terrorists-analysis/

Nuclear terrorism is defined as the use of a nuclear device by a terrorist organization to cause massive devastation or the use (or threat of use) of fissionable radioactive materials; “assaults on nuclear power plants is one form of nuclear terrorism.” The term nuclear terrorism is understood to be a terrorist act using a nuclear or radiological weapon intended to kill or capable of killing hundreds or thousands of people with one attack. Nuclear terrorism at times has also been defined as the world’s most dangerous terrorists acquiring the world’s most dangerous weapons.

The term “nuclear terrorism” encompasses a broad range of possible criminal acts. It includes actions against nuclear facilities, military or civilian, including vehicles transporting nuclear weapons, components, or materials; and those in which nuclear weapons, explosive devices, or materials are used to threaten or actually destroy people and property. The first type of action might serve as a precursor to the second; terrorists might assault or infiltrate a facility to steal a weapon or material for use in a future nuclear threat.

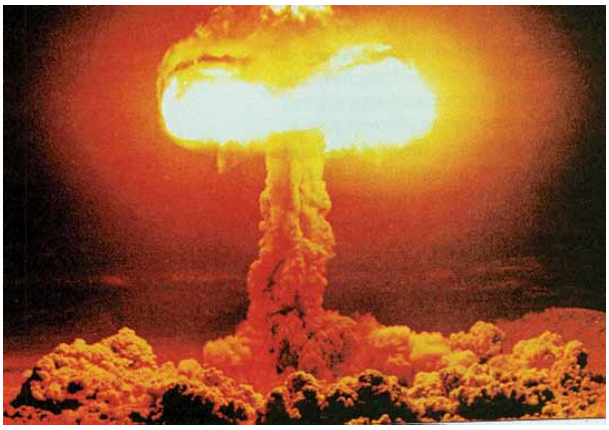
Global Concerns over Likelihood of Nuclear Terrorism

The discussion regarding nuclear terrorism first came in sight during 1970s; later on it took on a larger public character in the 1980s after NBC aired Special Bulletin, a television dramatization of a nuclear terrorist attack on the United States. In 1986 a private panel of experts known as the ITFPT (International Task Force on the Prevention of Terrorism) released a report urging all nuclear armed states to beware the dangers of terrorism and work on equipping their nuclear arsenals with permissive action Links. The experts warned that the probability of nuclear terrorism “is increasing and the consequences for urban and industrial societies could be catastrophic.” Since the creation of the atomic bomb, government officials, scientists, and concerned



citizens have been aware that weapons of mass destruction could fall into the hands of dangerous terrorist groups or rogue regimes. Bruce Hoffman mentions that there were least fifty two incidents of terrorist's threats to use WMD during 1968-1994.

The alarmists such as Scott D. Sagan threatens the world that the proliferation of nuclear weapons will lead to the spread of nuclear weapons into terrorist hands, or to such countries where there is a risk of terrorist access to such weapons. Before 9/11 many international security specialists claimed that terrorists were not interested in creating mass fatalities. These attacks, which have resulted in thousands of deaths and injuries, have raised concerns that the constraints on terrorists against committing mass murder have been breached, and that next time terrorists may use nuclear weapons or other weapons of mass destruction. Since 1995, there have been three significant episodes that bear out the danger that terrorists can have access to — and no scruples about using — devices, substances or weapons with the potential for mass killings. These episodes also manifest that preparation for acts of terrorism with such weapons of mass destruction or devices may be difficult and at times impossible to detect. The Aum Shinrikyo attacks on the Tokyo Subway in 1995 resulted in the death of 12 people and some 6000 were injured, the unsolved anthrax attacks in the United States (Florida, Washington and New York) in October 2001 are the first two. The third is the poisoning of Alexander Litvinenko in London in 2006 with Polonium- 210.



According to the Los Alamos National Laboratory in the United States, Polonium-210 is 250 billion times more toxic than hydrocyanic acid, the chemical used in Nazi gas chambers. Polonium-210 has been used as part of the trigger process in many nuclear weapons and the main grounds for suspicion that Iran wants to develop nuclear weapons is based on Iran's reported experimentation with this substance. Though this case is still being investigated by Britain's anti-terrorist police, most scenarios suggest that it can be read in one of only two ways. First, though the event may not have been an act of nuclear terrorism, it has to be taken as a warning of how undetectable the preparations for nuclear terrorism might be. Second, the death may have been the result of an active plan to conduct nuclear terrorism.

In contrast to the nuclear weapon case, Christoph Wirz and Emmanuel Egger conclude from their study that there are in principle no impossible obstacles to the acquisition and use of radiological weapons by a well-organized terrorist group, even though such an action remains high-tech and thus very difficult. During the 2008, the President Barack Obama said that nuclear terrorism is "the gravest danger we face." Former US President George W. Bush views this alarming threat in such remarks;

"The gravest danger to freedom lies at the crossroads of radicalism and technology. When the spread of chemical and biological and nuclear weapons…occurs, even weak states and small groups could attain a catastrophic power to strike great nations…"

It would be a milestone; timely for ongoing efforts to consolidate the non-proliferation regime, combat nuclear terrorism and strengthen nuclear safety says Mohammad ElBaradei.

Why Terrorists Potentially Want to go Nuclear?

Nuclear weapon is the most dangerous weapon that mankind has ever made. These weapons are ultimate weapons for ultimate destruction. Terrorists have been struggling for the publicity throughout the time and WMD may sever as an attention-getter stunt. Nuclear terrorism becomes a lucrative option for the terrorist organizations only because of lethality of nuclear weapons. Historically speaking, it has been observed that terrorists have been pursuing weapons which are increasingly lethal. Indeed, the acquisition of any type of nuclear weapon would boost their confidence as well as degree of

terrorist-actions. This inclination towards nuclear weapons or material could be well observed in the case of biological and chemical agents which are being used by terrorist groups/individuals in USA and else where. So, based on this premise it can be proposed that the tendency towards the acquisition of WMDs and their usage would increase in near future.

It is acknowledged that terrorist organizations are relatively weak in terms of power, prestige, and security, when compared with large states. So, these factors become a key to understand the dynamics of acquisition of nuclear technology by terrorist organizations. Terrorists have been constantly struggling to gain more and more power against their adversaries to boost their striking potential and this could be understood by Morgehthau's definition that the possession of power is really the possession of coercive potential. Prestige is also related to power and also an integral component of international relations. Prestige could play a motivating role and is subject to constant change. Coercive potential is directly related to the perceived power and prestige in one way or other. For terrorists to be perceived as credible source of threat, they must be perceived as powerful and prestigious. This may lead to the acquisition of ultimate weapons by terrorist organizations to raise a high and prestigious voice to fulfil their objectives or blackmail the adversaries.

Security is also connected to power and actors feel more secure once they are powerful. The power and security dynamics may unleash terrorists to exercise the phenomenon of "might is right". The alarming episode is that terrorists might be observing that the sole solution to their problems is the acquisition of WMDs, which could ensure their power, prestige, security and enhance the credibility of their threats.

To conclude one must understand that, terrorists are rational actors prevailing in the world. So, it can be assumed that the acquisition of nuclear weapons become more rational for terrorists as it may enhance the vulnerability of states. Similarly, it can be assumed that a terrorist group with nuclear weapon may pose a serious challenge of blackmail. At the same time terrorist organizations might consider that nuclear weapon may create environment of deterrence against their adversaries. Furthermore, it can be assumed that terrorists may use nuclear or radiological weapon to create precedence, so that states may not try to underestimate their capabilities. It may enhance the credibility of threats posed by the non state actors in the upcoming era.

Mr. MJ Hashmi *is M.Phil in Defence and Strategic Studies. He is an Author of a book entitled as "Nuclear Terrorism in Pakistan: Myth of Reality?" His Area of interest is Nuclear Terrorism, Nuclear Safety and Security issues in Pakistan, Arms Control and Disarmament, Nuclear Non-Proliferation.*

Virtual Plumes – The Emergency Preparedness Solution

Source: http://teletrix.com/products/virtual-plumes/

Virtual Plumes is a software program used to develop Emergency Preparedness drill scenarios. Mobile field teams equipped with Teletrix simulators are presented with radiation exposure rate readings in a real time virtual environment that mimics exposure rates they would see in an authentic radioactive plume release.

Virtual Plumes software provides the ability to model a radioactive plume release that in conjunction with Teletrix Simulated Radiation Meters, SP900 Probe Paks and SD900 Simulated Alarming Dosimeters provide state of the art training for emergency preparedness drills. All functions of plume modeling, execution, detection and dose monitoring for field teams are accomplished in a completely simulated environment.

How Virtual Plumes Works with Teletrix Simulators

Plume release parameters are loaded into the laptop-based Virtual Plumes software and dynamically presented to vehicle-mobile field teams monitoring the simulated release with Teletrix Simulated Radiation Meters, SP900 Probe Paks and SD900 Simulated

Alarming Dosimeters. Virtual Plumes knows where the field team is as it displays real time location via GPS to the projected plume's travel. Virtual Plumes then generates a 1-meter, window closed dose rate reading or a ground frisk count rate reading which is sent to the various Teletrix simulators being used by the team. The team monitors the activity of the plume using the simulators and responds to the obtained readings as if exposed during an actual event. The field team relies on its instrumentation to make decisions…just like they would have to in a real emergency.

Coaching, verbal cues and other prompts are eliminated from emergency preparedness exercises as trainees learn to measure plume activity and operate their instruments through the realistic use of simulators and experience of actually performing monitoring tasks. Once the exercise is terminated, the scenario can be replayed for debrief and feedback.

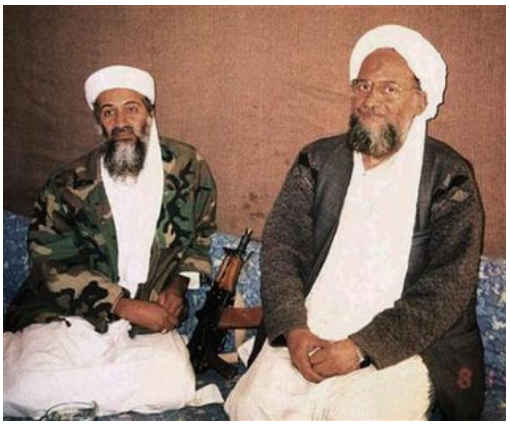
No other emergency drill exercise matches the realism available through the use of Virtual Plumes and the hardware simulation of Teletrix.

Al Qaeda In Pursuit Of Nuclear Weapons/Radiological Material

By Muhammad Jawad Hashmi

Source: http://www.eurasiareview.com/29012012-al-qaeda-in-pursuit-of-nuclear-weaponsradiological-material-analysis/

The pursuit of nuclear weapons and material by sub national groups has been an alarming challenge to deal with. This article will examine groups like al Qaeda that are said to have the ability and motivation to pursue nuclear



capabilities. This study simultaneously provides an insight into the issues related to the demand for these weapons capabilities and their supply.

According to Daniel Metraux, on the demand side of the nuclear market there are small national groups working with political or religious belief structures that may be stirred to pursue massive devastation. Some of these groups have large financial and organizational resources, together with the physical assets. Some of these groups also enjoye sanctuary either in a lawless grey zone or as guests of the local rulers where they can pursue their plans. On the other hand, in Japan, extensive legal protections for religious organizations operate in a very permissive environment without much state interference.

The supply side of the nuclear market indicates that such opportunities to acquire nuclear material and expertise are potentially numerous for such groups or such terrorist organizations.

The A.Q. Khan network revealed that people from inside a state weapons program in certain circumstances, take advantage of their expertise, access, and control over equipment and material for considerable profit and personal benefits. There is also the huge nuclear weapons inventory and production complex of the former Soviet Union (FSU) possessing a vast potential source of supply.

The Russian inventory of nuclear weapons, particularly tactical weapons, remains larger than any other in the world. In its report, the National Intelligence Council (NIC) indicated that Russian nuclear weapons storage facilities are facing vulnerabilities to an extent that an insider can attempt unauthorized actions.

The low funding, lack of trained security personnel, and insufficient equipment for security storing of such material brings Russian facilities housing weapons-usable nuclear material under the constant threat for leakages.

It is therefore recognized by the Moscow that there must be a need for increased security and assistance from other countries that have robust nuclear command and control systems.

The interest of some terrorists in nuclear weapons, the potential opportunities for acquiring nuclear weapons or material, and a number of non-traditional weapon designs, some of which may use previously uncontrolled strategic nuclear materials, all highlight the potential for terrorists acquiring nuclear weapons in an unprecedented fashion.

Security briefings suggest that jihadi groups are also close to producing “workable and efficient” biological and chemical weapons that could kill thousands if unleashed in attacks on the West. This is quite vivid in case of Al Qaeda which is trying to secure nuclear weapons, says Barack Obama:

“Al-Qaeda is trying to secure material for nuclear weapons and would have “no compunction in using them”, President Barack Obama warned, as he welcomed leaders for the largest gathering in the US since the Second World War.”

The US president has set himself the mission of convincing fellow leaders from 45 nations that they face the same threat – and to establish a plan to secure every ounce of the world’s nuclear weapons-grade fuel.

According to Williams, former CIA Director George Tenet said that at least two suitcase nukes had reached Al Qaeda operatives in the U.S. “Each suitcase weighed between 50 and 80 kilograms (approximately 110 to 176 pounds) and contained enough fissionable plutonium and uranium to produce an explosive yield in excess of two kilotons.” “One suitcase bore the serial number 9999 and the Russian manufacturing date of 1988. The design of the weapons, Tenet told the president, is simple. The plutonium and uranium are kept

in separate compartments that are linked to a triggering mechanism that can be activated by a clock or a call from the cell phone."

Attempts by Al Qaeda to Acquire Nuclear Weapons

Following is the detailed descriptive and prescriptive analysis of the world's biggest terrorist organization which allegedly seems to be fully motivated to acquire nuclear capability for terrorist activities.

Interest of Al Qaeda in Nuclear Weapons

It is a consensus among the world community generally, and the U.S. particularly, that al Qaeda has actively pursued the acquisition of nuclear weapons. As the director of the Defence Intelligence Agency told the Senate Select Committee on Intelligence on 11 February 2003, "Al Qaeda and other terrorist groups are seeking to acquire chemical, biological, radiological, and nuclear (CBRN) capabilities." It should be noted that to date there has been no public confirmation by officials that Al Qaeda has actually acquired nuclear weapons, or indeed any nuclear material necessary to build a weapon.

Motivational Factors

There may be various reasons for Al Qaeda to acquire nuclear weapons, but two rationales underlying its attempts to acquire nuclear weapons. First, may be the solemn religious duty, to defend co-religionists from the "Jews and Crusaders" and the second may be to inflict the maximum amount of physical damage on the United States.

Given their potential power, nuclear weapons are an obvious means to this end. On November, 2001 Al Qaeda announced, that we have chemical and nuclear weapons as a deterrent and if America used them against us we reserve the right to use them.

Efforts for CBRN (Chemical-Biological-Radiological and Nuclear Weapons)

Al Qaeda's early efforts to develop nuclear weapons were not impressive. Mamdouh Mahmud Salim, bin Laden's "top man" on nuclear matters and an early member of al Qaeda, was apparently the victim of a scam involving low grade reactor fuel. According to another researcher, "intelligence sources now believe that criminals sold al Qaeda irradiated canisters purporting to contain uranium stolen from Russian army bases, whereas in fact the contents would have had no military value whatsoever it had been passed to rogue nuclear scientists." Salim was finally arrested in Munich on September 1998, and extradited to the United States, where he awaits trial.

Al-Fadl testified that in 1993 he was sent to meet a man outside the capital who was selling uranium, allegedly from South Africa. He also testified that he did not know whether the deal ever took place, but that bin Laden was very serious about buying the material. According to press accounts, Osama bin Laden and his associates were tricked into paying for material called Red Mercury, which they believed to be weapons grade nuclear material.

In the mid 1990s, a number of smugglers claimed to have nuclear material that they referred to as Red Mercury, but in most instances the material was fictitious or radiological waste and not weapons grade nuclear material.

Sources alleged that the Taliban attempted to recruit a former Soviet nuclear weapons expert from a Central Asian state, but the plot was disrupted by Russian authorities. Searches of al Qaeda facilities after Operation Enduring Freedom have produced little evidence of much progress in the al Qaeda nuclear weapons program.

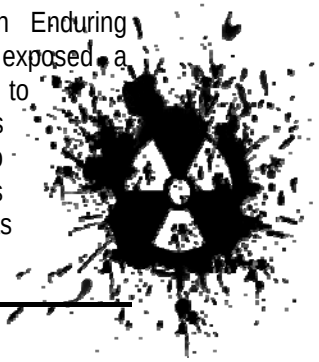
Pakistani Scientists & Al Qaeda: A Conspiracy VS Reality

Western concerns about the mythical relations between Al Qaeda and Pakistani scientists have been the source of unrest particularly after the 9/11.

It was reported that Sultan Bashiruddin Mahmood, a 38 year veteran of Pakistan's civilian nuclear program met with Osama bin Laden in Pakistan. But there are no further details regarding this meeting that could inform that this meeting was actually held.

Suleman Assad and Mohammed Mukhtar, two nuclear scientists suspected by the Americans for their involvement with al Qaeda or the Taliban fled to Burma during late 2001 or early 2002 to avoid questioning.

During the course of Operation Enduring Freedom, allied military forces exposed a number of documents related to nuclear weapons. Among them was a weapons design that experts who examined it characterized as unworkable, and other documents



suggesting the group was also interested in a (RDD) Radiological Dispersion Device.
CNN obtained several papers from a suspected al Qaeda location in Kabul. Albright concluded that there was no evidence that the al Qaeda had gone beyond theory: "To create a nuclear weapon, he said a designer must learn a whole set of manufacturing steps not mentioned in al Qaeda's manual and develop confidence in the weapon's design."
Other documents suggested a more sophisticated knowledge of nuclear weapons, although they contained mistakes, e.g. references to "Saturium."

Future Prospects of Al Qaeda's CBRN Weapons Ambitions

There is not solid evidence that al Qaeda or indeed any terrorist group has acquired nuclear weapons, despite their burning desire.
Brigadier General Yossi Cooperwasser, the former chief of research for Israeli military intelligence said that we don't have any evidence to support concerns over lost, stolen or misappropriated nuclear devices.
However, while the likelihood might be low, the consequences of the terrorists' use of nuclear weapons are likely to be high.
On June 2002, an al Qaeda spokesman declared the organization's intention to kill four million Americans, albeit with chemical or biological rather than nuclear weapons.
The death of Bin laden in Abbotabad in 2011, and the arrest of key al Qaeda's 53 lieutenants e.g. Khalid Shaikh Mohammed would create significant new hurdles for the group in the pursuit of their nuclear objectives.

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US offers nuke clean-up help

Source: http://www.news24.com/World/News/US-offers-nuke-clean-up-help-20120205

The United States is offering technical assistance to Spain to clean up land contaminated by radiation from undetonated nuclear bombs that accidentally fell on the area in 1966, the US State Department announced on Saturday.
The Spanish and US governments have not yet reached an agreement on the clean-up.
At the request of the Spanish government, an American technical team led by the US Energy Department travelled to the southeastern Spanish town of Palomares in February 2011 to offer advice for the remediation plan.
"No final decision has been reached regarding cleanup of the site," the State Department said in a statement on its website.
On January 17 1966, a US B-52 bomber carrying four nuclear bombs collided with a KC-135 tanker during mid-air refueling off the coast of Spain. In addition to killing seven crew members on the airplanes, three hydrogen bombs fell to the ground near Palomares and one fell into the Mediterranean Sea.
The non-nuclear explosives on two of the bombs that hit the ground detonated, spreading seven pounds of plutonium over a 200 hectares. The bomb that fell into the sea was recovered intact after a search by the US Navy.
"In 1966, we worked closely with Spain to remediate the accident site, and have collaborated with Spanish authorities for more than 40 years to monitor the site and the health of local inhabitants," the State Department statement on Saturday said.
Spanish Foreign Minister Jose Manuel Garcia-Margallo spoke with US State Department Secretary Hillary Clinton about the remediation this week during the Munich Security Conference in Germany, according to the Spanish newspaper Herald of Aragon.
Clinton is "personally committed" to resolving the contamination issue, Garcia-Margallo told the Spanish news media.

1966 PALOMARES B-52 CRASH

Source: http://cline-disasters1.creekview-hs.wikispaces.net/Palomares%20Incident

In 1966, at the height of tensions between the United States and the USSR, the USAF (United States Air Force) initiated operation Chrome Dome. This was an operation intended to keep nuclear armed B-52s in the skies patroling the border of the former USSR, ready to strike in the event of a full scale war. However, like most military operations, Chrome Dome did far more damage than good. Three incidents in the late 1960s, including Palomares, resulted in B-52 crashes, dropping the H-bombs on board from 31,000 feet.

In mid January 1966, a B-52 carrying four Hydrogen Bombs collided with a refueling plane at little more than 30,000 feet. The resulting explosion destroyed the refueling jet, and severely damaged the B-52, ripping off the left wing. Four of the seven crew members managed to eject before impact, however three were killed in the initial explosion. The four H-bombs fell from the plane, and the two that landed in Palomares, Spain, detonated the conventional explosives inside, spreading radioactive Plutonium for miles.

Aftermath

The resulting explosions from the Palomares crash spread Plutonium, the main radioactive element in H-bombs, for miles around the small fishing community of Palomares. The town and surrounding areas were almost immediated evacuated, and many of the people alive in Palomares during the incident suffered radiation levels far beyond the normal amount, causing cancers, radiation sickness, and several deaths. Over the next few months, over 1,700 barrels of topsoil and contaminated earth were removed and shipped to the United States to be disposed of. However, over forty years later, traces of radioactivity in the soil is still present. While the citizens of Palomares today do not report any side-effects to humans, the crops and livestock in Palomares have been reported to have cancerous conditions, reported to be likely from the contaminated soil and vegetation fed to animals.

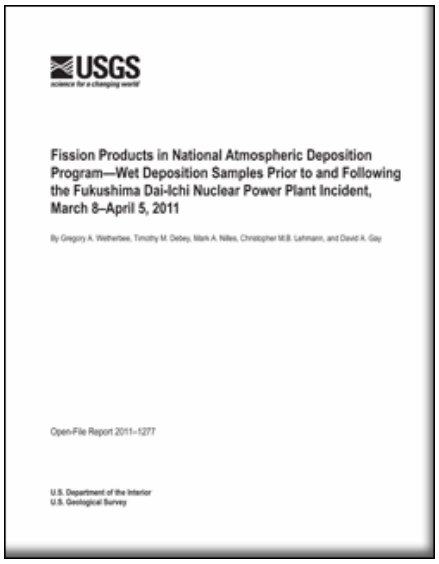
Locally, citizens were weary to swim in the waters of the Med. Sea, due to the fourth hydrogen bomb being lost at sea. Many were concerned about harmful levels of radiation leaking from the bomb, although the possibility of large amounts of radiation near the shoreline was extremely unlikely. While many were evacuated from Palomares, most were allowed to return after the bombs were

recovered and the soil was decontaminated.
Globally, however, the Palomares Incident would mean large set-backs for the USAF (United States Armed Forces) and the government. Spain, unhappy with the carrying of armed nuclear weapons, closed its airspace to all military aircraft coming to and from Gibraltar. Eventually, after two other nuclear B-52 crashes, Chrome Dome would be put to an end, realizing that it was simply too risky to carry nuclear weapons in the air at all times. Many opponents of the nuclear arms race used Palomares as an example of
the environmental risks to such weapons.

Enviornmental Concerns

Although the Palomares Incident was over 45 years ago, the radiation from the incident is still affecting southern Spain. While the citizens of Palomares do not report any damage to humans, several areas of Palomares and the surrounding areas are fenced off and claimed to be "uninhabitable." Over 50,000 cubic meters of radioactive soil is still present in Palomares, and while the clean up operations in the 1960s went fairly well, the disaster is far from fixed.
In my own opinion, the Palomares Incident ranks along with some of the worst environmental nuclear disasters. Had something like this happened in my community, if we even survived we would be forced to move, possibly hundreds of miles, and then worry about being exposed to extremely harmful levels of radiation. Those affected by the Palomares Incident were extremely unfortunate, and due to careless mistakes of others, were forced to leave their livelihood and some even lost their lives.

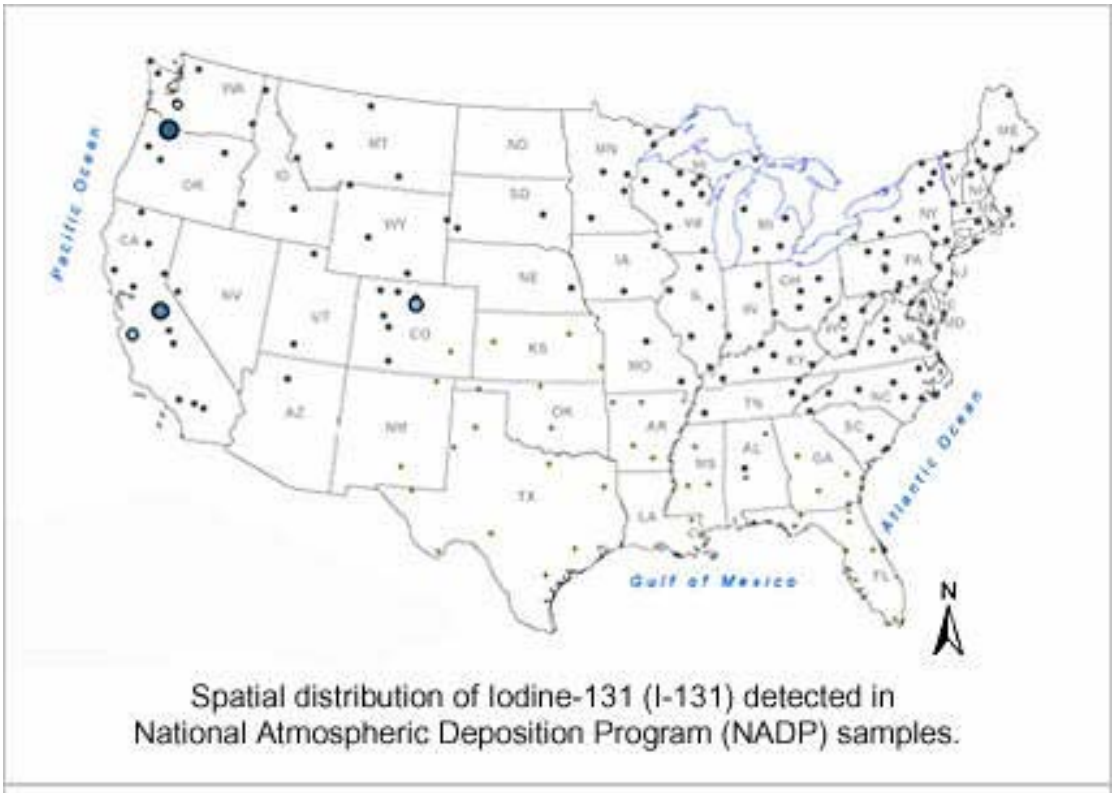
Fission Products in National Atmospheric Deposition Program—Wet Deposition Samples Prior to and Following the Fukushima Dai-Ichi Nuclear Power Plant Incident, March 8–April 5, 2011



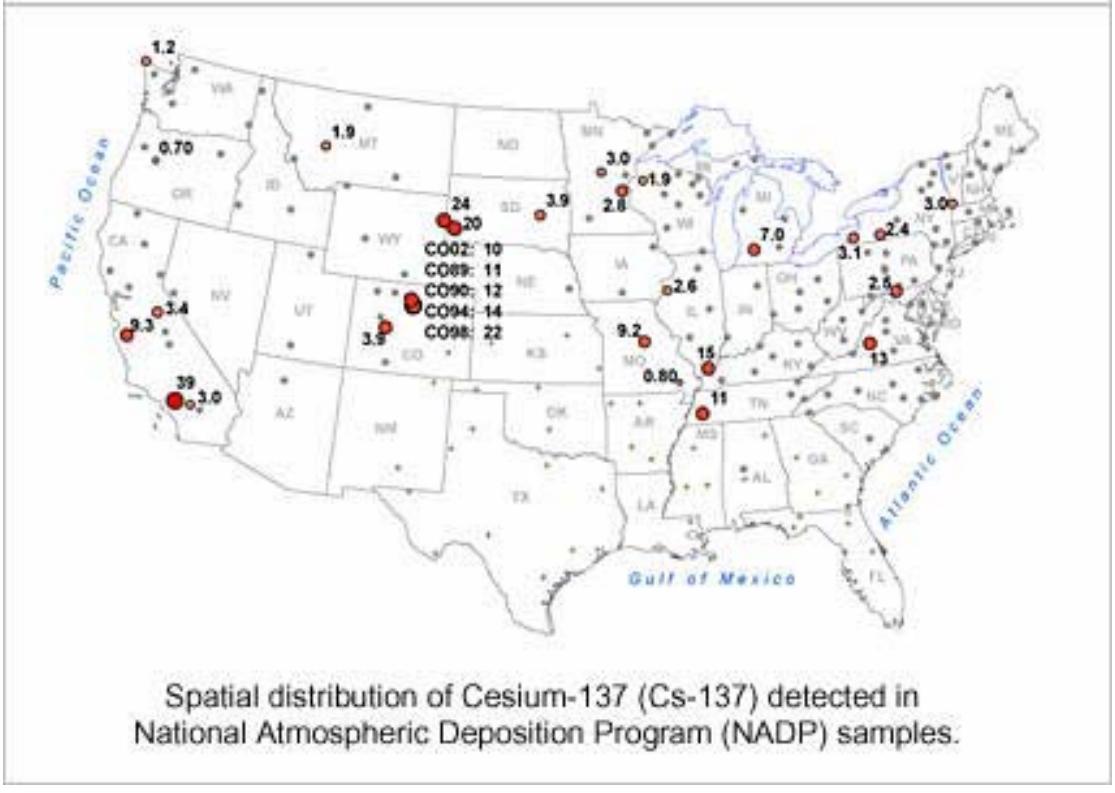
Wetherbee, G.A., Debey, T.M., Nilles, M.A., Lehmann, C.M.B., and Gay, D.A., 2012, Fission products in National Atmospheric Deposition Program—Wet deposition samples prior to and following the Fukushima Dai-Ichi Nuclear Power Plant incident, March 8–April 5, 2011: U.S. Geological Survey Open-File Report 2011–1277, 27 p.

Abstract

Radioactive isotopes I-131, Cs-134, or Cs-137, products of uranium fission, were measured at approximately 20 percent of 167 sampled National Atmospheric Deposition Program monitoring sites in North America (primarily in the contiguous United States and Alaska) after the Fukushima Dai-Ichi Nuclear Power Plant incident on March 12, 2011. Samples from the National Atmospheric Deposition Program were analyzed for the period of March 8–April 5, 2011. Calculated 1- or 2-week radionuclide deposition fluxes at 35 sites from Alaska to Vermont ranged from 0.47 to 5,100 Becquerels per square meter during the sampling period of March 15–April 5, 2011. No fission-product isotopes were measured in National Atmospheric Deposition Program samples obtained during March 8–15, 2011, prior to the arrival of contaminated air in North America.



Spatial distribution of Iodine-131 (I-131) detected in National Atmospheric Deposition Program (NADP) samples.



Spatial distribution of Cesium-137 (Cs-137) detected in National Atmospheric Deposition Program (NADP) samples.

NOTE: You can download full report from Newsletter's website – "CBRNE-CT Papers" link.

Elevated radioactivity levels found in North Anna well

By Peter Bacque (Richmond Times-Dispatch)
Source: http://www2.timesdispatch.com/business/2012/feb/22/tdmain01-elevated-levels-of-a-weak-form-of-radioac-ar-1706167/

Dominion Virginia Power has found elevated levels of a weak form of radioactivity in a sampling well at its North Anna nuclear power station.

The radiation poses no hazard to the public, the Nuclear Regulatory Commission said.

On Friday, the Richmond-based utility was notified by its laboratory contractor that water taken from an on-site groundwater sampling point contained an unusually high level of tritium — more than twice the EPA's standard for drinking water.

"At this point, I don't think there's any concern on the NRC's part that it would affect (nearby Lake Anna) or drinking water supplies," said Roger Hannah, a spokesman for the federal regulatory agency's Atlanta office.

Dominion Virginia Power is not sure where the radioactivity is leaking from, but the two reactors at the Louisa County plant are not the source, company spokesman Rick Zuercher said.

The company said it has been working to find and fix potential sources of the escaping tritium and that the contaminated water is not leaking off-site.

"There is no evidence that the increased concentration of tritium we sampled was related to the earthquake" on Aug. 23, which shut down the plant for nearly three months, the company told the NRC on Tuesday. "Monitoring of the sample points both inside and outside the protected area and a post-seismic hydrogeological evaluation show this to be the case."

However, one anti-nuclear group was skeptical of Dominion Virginia Power's and the NRC's efforts to solve the leak issue.

"We remain concerned about the inaccessible piping systems that carry radioactive water," said Paul Gunter with Beyond Nuclear, which is based in Maryland. "The industry and the NRC are basically groping in the dark to find these leaks."

Tritium is a naturally occurring radioactive form of hydrogen, but it also is produced as a byproduct of the nuclear reactions in power plants like North Anna.

Tritium emits a weak form of radiation, the NRC said. Because it is produced by cosmic rays colliding with air in the atmosphere, the federal agency said, tritium is found in very small or trace amounts in groundwater throughout the world.

Exposure to radiation can have adverse health effects. For instance, radiation doses can increase the chance of getting cancer and causing genetic abnormalities in future generations.

"Last Friday, we received confirmation from an outside contractor that tritium at a sample point exceeded the voluntary reporting level established by the nuclear industry in 2006," the company told the NRC on Tuesday.

"No detectible tritium was found in any of the other nine sample points within the protected area," Dominion Virginia Power said, "and there are no sources of drinking water in this area."

The company is collecting the contaminated water in subsurface drains and processing it on the plant site, Zuercher said.

The industry's voluntary threshold for reporting such contamination — which Dominion Virginia Power adheres to — is 20,000 picocuries per liter. The sample the company took showed a radiation concentration of 53,300 picocuries per liter.

Picocurie is a term that describes how much radiation and, therefore, how much tritium, is in the water. The EPA's maximum contaminant level for tritium in drinking water is 20,000 picocuries per liter.

In October 2010, Dominion Virginia Power reported a confirmed tritium sample of 16,500 picocuries per liter in another sampling point in the North Anna plant's protected area.

"We will continue to identify and repair any other potential sources," the company said.