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Air Force begins giving mandatory anthrax shots in Korea

By Franklin Fisher, Stars and Stripes
Pacific edition, Friday, March 9, 2007

OSAN AIR BASE, South Korea — The U.S. Air Force in South Korea resumed mandatory anthrax shots for its airmen Wednesday, officials said.

Osan Air Base began mass vaccinations, said Lt. Col. Michael E. Shavers, spokesman for 7th Air Force at Osan. About 4,000 airmen are slated for the shots there, he said.

At Kunsan Air Base, the 8th Fighter Wing was to begin shots Friday for the wing's 1,600 airmen, said Capt. James P. Lage, a wing spokesman.

This comes after the Pentagon's top health official approved plans to restart anthrax vaccinations for troops serving in South Korea or in the U.S. Central Command area of operations.

Since 2005 the shots had been voluntary. But when only half of U.S. troops chose to get them, the Pentagon in 2006 announced they would become mandatory for those deemed most at risk.

On Wednesday, the Air Force became the first branch to resume the shots in South Korea, officials at U.S. Forces Korea in Seoul said.

It could not immediately be learned from USFK when the other services on the peninsula are scheduled to begin anthrax shots.
The shots are to be given to all of the nearly 7,900 airmen serving in South Korea, except those who may be deemed exempt for medical or other reasons, officials said.
U.S. Air Force headquarters has set a goal that 90 percent of airmen in South Korea and in the CENTCOM area will have received or started to receive the shots by April 30 and the rest thereafter, Shavers said. The process entails six shots given over 18 months.
At Osan on Wednesday, medical teams staffed tables in the base theater and vaccinated airmen from 6:30 a.m. to 6 p.m., a schedule they were to repeat Thursday, Shavers said. Shots also were being given at the base hospital, and are planned to be given at certain on-base squadrons.
In addition, medical teams are prepared to visit places other than Osan and Kunsan, said Lt. Col. Lee Harvis, commander of the 51st Aerospace Medicine Squadron at Osan.
“If we have to bring it to them, we’ll bring it to them,” he said.
Airmen who say they need to be exempted from the shots on medical grounds will be sent to the base hospital for checks to determine whether an exemption is warranted, Harvis said.
“It’s not our job to force anybody,” Harvis said.
No airmen refused the shot, Harvis said Wednesday afternoon.
Airmen have received medical briefings at their units about the upcoming immunizations, and also are given an informational pamphlet, Harvis said.
Should airmen decline the shot, a medical official will talk with them about their reluctance. If they still decline, their names are to be noted and they are to discuss their refusal with their squadron commander, said Harvis.
Master Sgt. Daniel Saiz of the 51st Mission Support Squadron got his first anthrax shot in the base theater at Osan on Wednesday.
“I wasn’t interested,” he said, until medics gave a briefing about how lethal even a small quantity of anthrax can be.
“I prefer to get the shot,” said Saiz, “than to get what comes with picking up anthrax.”
http://www.estripes.com/article.asp?section=104&article=43107&archive=true

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Los Angeles Times
March 9, 2007
Pg. 1

U.S. And Iran Have Been Talking, Quietly

Despite little public dialogue, the foes share a sliver of common ground: an interest in Mideast security and resources.

By Maggie Farley, Times Staff Writer

UNITED NATIONS — The White House insists that the United States won't talk directly with Iran until Tehran suspends its nuclear program. But U.S. officials have been discreetly meeting their Iranian counterparts one-on-one for more than a decade, often under the auspices of the United Nations.
The little-known history of these contacts between the two nations, which have not had formal diplomatic relations since the Iranian hostage crisis ended in 1980, is one of misunderstandings and missed opportunities. Budding cooperation on Afghanistan, Iraq and Al Qaeda has led to increased distrust and frustration instead of warmer ties — a record that adds to tensions as representatives of both countries prepare to attend a regional summit this weekend in Baghdad.
Secretary of State Condoleezza Rice's top Iraq advisor, David Satterfield, said Thursday that he would confront Iran about its alleged provision of materiel and training for attacks on U.S. troops in Iraq. He added that he would not seek out Iranian diplomats, but said, "If we are approached over orange juice … we are not going to turn and walk away."
Despite decades of tension, the continuing conversations reveal a slender swath of common ground upon which Washington and Tehran have built a delicate bridge: an interest in the region's security and resources.
"The point is that we think the Iranians can do a lot that will be conducive to peace in the region and good for them and good for their people," White House Press Secretary Tony Snow said last week. "We're going to continue doing whatever we can to encourage them to do it. And if they want to have bilateral relations, it is up to them."
But whispered dealings between the foes have had a way of going wrong. In the 1980s, the Reagan administration decided to sell weapons to Iran to win its help in securing the release of U.S. hostages in Lebanon and diverted the proceeds of the arms sales to Nicaraguan rebels, leading to the Iran-Contra scandal.

In 1994, President Clinton covertly condoned Iran's arms shipments to Bosnian Muslims, at a time when the U.S. had pledged to uphold a U.N. weapons embargo. The policy was revealed in 1996 and met widespread criticism, keeping Iran, headed then by reformist President Mohammad Khatami, and the U.S. from broadening ties.
In 1999, Clinton offered an "authoritative and unconditional" dialogue with Iran, but Tehran insisted that the U.S. lift its sanctions first.
In the end, it was the U.N. that provided a discreet diplomatic safe house in which the two countries could talk.
In 1998, U.N. diplomat Lakhdar Brahimi, an Algerian, created a group called the "6+2" that met in New York to address the conflict in Afghanistan. It consisted of the country's six neighbors: China, Pakistan, Iran, Turkmenistan, Uzbekistan, Tajikistan, as well as Russia and the United States.
"I remember the Iranian diplomats and the Americans saying that this was the first time they were in the same small room together," Brahimi said in an interview.
In 2001, the U.N. created another forum to facilitate contacts between the U.S. and Iran, called the Geneva Initiative, which included Italy and Germany.
"It was really just a cover to allow the Iranians and the U.S. to meet," Brahimi said. "After a while, I told them, 'We don't have to drag the Italians and Germans in every time you want to talk.' Then when it was just us sitting at the table, I would get up and tell them, 'I will leave you alone.' "
After the Sept. 11 attacks, the two nations had a common enemy in the Taliban: the Sunni rulers of Afghanistan, whom Shiite-majority Iran regarded as a threat and the U.S. considered protectors of Osama bin Laden.
In the days before the U.S.-led invasion of Afghanistan in October 2001, American and Iranian officials held extensive talks to coordinate cooperation between Iranian-backed anti-Taliban warlords and U.S. troops.
The cooperation continued politically as well. Iranian diplomats were particularly helpful during a conference in December 2001 in Bonn that established Afghanistan's interim government.
James Dobbins, who represented the State Department at the time, said the Iranian envoys were "essential" in shaping Afghanistan's government. At one point, the Northern Alliance's Younis Qanooni insisted on controlling 18 of 24 ministries, a demand that would have prevented an agreement.
Dobbins said that after diplomats from several countries "worked him over" through the night, Iran's U.N. ambassador, Javad Zarif, took Qanooni aside and whispered into his ear, "This is the best deal you're going to get. You better take it." Qanooni conceded two ministries and the deal was sealed. "It was decisive," Dobbins said.
Iran made it clear it was interested in a broader strategic dialogue with the United States. But the U.S., thinking it had the upper hand, brushed off the overtures, Dobbins said, and then-Secretary of State Colin L. Powell wrote to thank every foreign minister who had attended the conference — except Iran.
Six weeks later, in President Bush's 2002 State of the Union address, he named Iran part of an "axis of evil." Iranians had been expecting some sort of diplomatic reward in exchange for their help in Afghanistan, and took it as a slap in the face.
Still, for about a year, Iranian diplomats continued to meet in Kabul with the U.S. ambassador to Afghanistan, Zalmay Khalilzad, usually in Brahimi's U.N. villa, known as Palace No. 7. Khalilzad, an Afghan native who speaks Persian, was at the Bonn conference and would become a key player in the cautious diplomatic connection. Now the U.S. ambassador to Iraq, he will be at the table Saturday in Baghdad.
The talks about Afghanistan broadened to include other strategic issues.
"They certainly talked about Al Qaeda and Iraq," Brahimi said. "But I don't how much they discussed wider issues, such as the resumption of diplomatic relations. They certainly did not when we were around."
But Iran was becoming emboldened. In May 2003, a two-page fax arrived at the State Department: a "road map" to normalized relations, sent through the Swiss ambassador in Tehran. Ostensibly endorsed by Iran's senior political and religious leaders, it addressed all the outstanding differences between the U.S. and Iran, including concerns about Tehran's nuclear program.
Secretary of State Rice, then director of the National Security Council, says she never saw the memo, and the president has not acknowledged it. Instead, the administration scolded the Swiss ambassador for overstepping his bounds, said Trita Parsi, president of the National Iranian American Council, who helped convey another copy of the memo to the White House.
The U.S. was at the height of its power in the region: Its army was in Iraq, Iran had yet to begin enriching uranium, and the reformist Khatami was still president. It didn't seem like Washington's last, best chance to stop Iran's nuclear program and change the direction of its relationship with Tehran.
But the fortunes of the two countries began to shift. Iranians elected a populist firebrand, Mahmoud Ahmadinejad, as their president, and Tehran forged ahead in its uranium enrichment program in defiance of U.N. Security Council resolutions. Iran's influence in Iraq, Afghanistan and Lebanon has boosted Tehran's regional standing and in turn raised the cost of winning its cooperation.

In January 2006, the U.S. asked Iran for talks on Iraq, said Zarif, the Iranian ambassador. Khalilzad had permission to arrange meetings with Iranian counterparts — but then there was a change of heart in the White House.
"The U.S. sends out these trial balloons, as soon as Iran responds positively, the interagency talks begin in Washington, and the results are always negative," Zarif said in an interview last year.
Some analysts say the White House continues to send a mixed message to Iran.
"At the same time we're beating them up in the Security Council trying to get them under sanctions, we're trying to get them to help us in Iraq," said Flynt Leverett, a former CIA analyst and Middle East expert at the State Department, now at the New American Foundation. "Why should they be helpful?
John R. Bolton, the former U.S. ambassador to the U.N. and a staunch advocate of "regime change" for Iran, said that the convergence of interests wasn't as tidy as it had been in Afghanistan.
"Whether they will perform a similar 'useful' role here remains to be seen. I wouldn't count on it," Bolton said in an interview. "It's not like we're going to give them a pass on their nuclear program if they stop interfering in Iraq."
Dobbins said that among the lessons learned from Afghanistan, was that Iran can make or break the situation.
"If we can't get Iranian help in stabilizing the situation, it's not going to get stabilized," he said. "In the end, the only country with significant influence and capacity for good and evil is Iran."
http://www.latimes.com/news/nationworld/world/la-fg-irantalks9mar09,0,6526382.story?coll=la-home-world

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Washington Post
March 9, 2007
Pg. 17

U.N. Nuclear Agency Curtails Technical Assistance To Iran

By Molly Moore, Washington Post Foreign Service
PARIS, March 8 -- The United Nations' atomic monitoring agency on Thursday curtailed nearly two dozen nuclear technical aid programs to Iran as part of an international effort to pressure the country to halt its uranium enrichment program.
Members of the International Atomic Energy Agency (IAEA) meeting in Vienna agreed to suspend or reduce 22 of the 55 technical aid projects it funds for improving Iran's civilian use of nuclear technology.
The board's action paralleled U.N. sanctions imposed earlier on Iran over concerns expressed by the United States, European countries and others that the Islamic republic's uranium enrichment program is a prelude to weapons development. The government in Tehran denies that is the case, and IAEA officials say they have been unable to prove it.
Ali Asghar Soltanieh, the Iranian ambassador to the IAEA, criticized the board's decision, telling reporters, "None of these projects are in fact related to the enrichment program, which will continue as planned."
Soltanieh said that one of the aid projects suspended by the IAEA on Thursday involves the use of radiation to strengthen industrial cables and prevent accidents. "Those who prepared this resolution have ill political motivation, or they don't know what nuclear technology means at all," he said.
The recommendation by agency chief Mohamed ElBaradei was accepted by consensus, with no opposition from Russia, China or other nations -- most of which have strong economic ties to Iran -- that have refused to agree to tougher sanctions pushed by the United States and its allies.
"No one declared dissatisfaction with the choices, which were made in an extremely professional manner," said Ramzy Ezzeidin Ramzy, Egypt's chief IAEA representative.
The board exempted programs with medical, agricultural or humanitarian purposes.
North Korea and Iraq under Saddam Hussein are the only two countries the IAEA had previously punished by cutting or reducing technical aid over concerns about nuclear weapons production.
In December, the U.N. Security Council voted for minor sanctions on Iran, including freezing the assets of 10 officials and 12 institutions linked to nuclear programs. The council is now considering tougher action in the face of Iran's continued defiance of international demands for a halt to its uranium enrichment program, though U.N. members remain divided over whether to impose more sanctions or rely on diplomatic efforts to persuade Tehran to back down.
The IAEA board also discussed a letter from Arab governments expressing concern over Israel's nuclear weapons program.
"The international community should address the issue in a fair and balanced way," Norma Goicochea Estenoz, Cuba's ambassador to the IAEA, told reporters. She said the U.N. call for Iran to halt nuclear development without confronting Israel over its program is a "double standard."

The letter called for Israel to sign the nuclear Non-Proliferation Treaty, which has been signed by 188 countries, including Iran.
http://www.washingtonpost.com/wp-dyn/content/article/2007/03/08/AR2007030801108.html

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Washington Post
March 10, 2007
Pg. 8

Nuclear Weapons Rarely Needed, General Says

By Walter Pincus, Washington Post Staff Writer

The head of U.S. Strategic Command has told Congress that precision conventional weapons have replaced the need for nuclear ones in almost all areas, except when a quick intercontinental strike is required against unexpected or fast-moving threats.

"While America possesses dominant conventional capabilities second to none, we lack the capability to respond promptly to globally dispersed or fleeting threats without resorting to nuclear weapons," Gen. James E. Cartwright, commander of U.S. Strategic Command (STRATCOM), told the House Armed Services subcommittee on strategic forces on Thursday.

Cartwright said the Air Force is studying a conventional-strike missile launched from the United States that is maneuverable at global distances. But he said the near-term solution is "to deploy a precision global strike missile" using current ICBMs, two years after Congress approves funding.

Rep. Ellen Tauscher (D-Calif.), the subcommittee's chairman, pointed out that although a conventional-strike capability that can hit targets anywhere in the world "is a powerful concept," Congress last year expressed concerns about a proposal to modify Trident sub-launched ICBMs with conventional warheads. That is because countries such as Russia could not distinguish such a launched missile from one that is nuclear.

Cartwright voiced strong support for the Reliable Replacement Warhead (RRW) program, which could result in a new generation of U.S. nuclear warheads being produced by 2012. He tied the introduction of RRW weapons to the reduction of today's U.S. stockpile of roughly 6,000 warheads to 2,200 or fewer by that date. Cartwright said the new RRW would feature a security device that would render the warhead useless -- like "a paperweight" -- if it fell into the wrong hands.

Tauscher, whose district contains the Lawrence Livermore National Laboratory, which won the basic design for the first RRW, said Congress will not make a decision to build the weapon this year. But she added, "We need a public debate on the nature of strategic deterrence and the role of nuclear weapons."

Cartwright, who is also responsible for Pentagon space programs, said debris created by China's recent anti-satellite test introduced a new threat to astronauts and satellites from all nations. He told the subcommittee the United States "must have better space detection, characterization and assessment tools" to monitor objects in space.

With about 40,000 pieces of debris already in space, Cartwright said, collisions regularly occur. He added that it has become difficult to predict where debris will be when planning the launch of space shuttles and new satellites.
http://www.washingtonpost.com/wp-dyn/content/article/2007/03/09/AR2007030902334.html

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New York Post
March 10, 2007

Defector's Intel Trove

By Oron Dan and Andy Soltis

Iran's ex-deputy defense minister smuggled top-secret maps and documents - some of which prove terror ties around the Middle East - out of Tehran when he defected to the West, former colleagues said yesterday.

The confidential files Ali Reza Asghari brought with him provide details about Iran's links to terrorist groups such as Hezbollah and Islamic Jihad as well as the radical Mahdi Army and Badr Corps in Iraq, according to an influential Arab newspaper.

An Iranian colleague told the paper, Al-Sharq al-Awsat, that Asghari also had secret documents concerning Iran's nuclear missile program.

Iran's elite Revolutionary Guards are beefing up defenses around the country's nuclear reactors out of fear that the United States and Israel, now armed with the new intelligence, could attack them, the Saudi newspaper Al-Watan reported yesterday.

Al-Watan was the first to disclose Asghari's defection last month in Istanbul, Turkey.
Asghari is believed to have planned his defection well in advance because he arranged for relatives to leave Tehran before him and apparently had a fake passport waiting for him in Turkey.
Records show Asghari made a final phone call from his cellphone to relatives in Tehran on Feb. 7, the day he arrived in Istanbul, the Israeli newspaper Yediot Achronot reported yesterday.
The paper reported that when Iran complained that Turkish police weren't actively investigating Asghari's disappearance, a Turkish Foreign Ministry official said, "It's a lost case."
U.S. officials said privately this week that Israel was behind the defection and that Asghari was now providing Western intelligence agencies with Iranian military secrets.
Israel has denied any involvement and hinted it was an American operation.
An Israeli intelligence figure told Yediot Achronot that the defection may explain recent successes by U.S. intelligence in Iraq, including the capture of Asghari's former deputy there.
Since his defection, Asghari has been described as a former senior general in the Revolutionary Guards, the one-time national security adviser to former President Mohammed Khatami and the virtual founder of the Hezbollah guerrillas in Lebanon.
Yediot Achronot also said he can provide vital information about unsolved crimes, including the 1984 kidnapping and murder of CIA station chief William Buckley in Lebanon and the bombings in Argentina of the Israeli Embassy in 1992 and a Jewish center in 1994.
http://www.nypost.com/seven/03102007/news/worldnews/defectors__intel_trove_worldnews_oron_dan_in_jerusalem_and_andy_soltis_in_new_york.htm

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Washington Times
March 10, 2007
Pg. 7
Russia

Talks On Payments From Iran Founder

MOSCOW -- Talks between Russian and Iranian nuclear officials over delayed payments for nuclear fuel destined for a Russian-built power plant ended yesterday without apparent resolution and each side suggested the other was negotiating in bad faith.
The vice president of Iran's Atomic Energy Organization of Iran, Mohammed Saeedi, said that his country was ready to provide more funds to enable the September start of the Bushehr plant.
A Russian official familiar with the negotiations between the countries said Iranian officials refused to sign a document promising the increased payments, and the official indicated Russia would not ship uranium fuel this month as expected.
http://www.washtimes.com/world/20070309-115305-8167r_page2.htm

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New York Times
March 10, 2007
Pg. 13

Where Those Reactors And Centrifuges Came From

By Jeremy Bernstein
Aspen, Colo.--THE six-party agreement signed with North Korea last month should certainly be applauded as a necessary first step in improving relations with the United States. While a good deal of the North Korean program is shrouded in mystery — just this week the United States again urged the North Koreans to disclose any uranium-enrichment activities — there are some things we do know, including the nature and status of the country's reactors. North Korea's one functioning reactor, at Yongbyon, uses natural uranium for fuel and graphite as its moderator (the substance that slows the neutrons and enhances the fission reaction). These are the same ingredients used in the first reactor ever designed, which was tested by Enrico Fermi at the University of Chicago in 1942. The best estimate is that Yongbyon has produced about 100 pounds of plutonium since it went into full operation in 1990. This is enough for six to eight nuclear bombs, depending on their design. (The North Koreans might have used about six kilograms in their Oct. 9 test.) The construction of the larger reactors North Korea was building was apparently already suspended, for various technical reasons, before the agreement.

The North Koreans have been fairly transparent about their reactor program but almost totally opaque about their program to make natural uranium suitable for nuclear weapons by using centrifuges. We know that there is such a program, but we do not know where it is or how much, if any, uranium it has enriched. Centrifuges are much easier to hide than reactors.

The provenance of the North Korean centrifuge program is a useful lesson in nuclear proliferation. One can trace it back to the spring of 1945, when the Russians were overrunning Germany. Along with the army came a cadre of atomic and nuclear physicists who were looking for both German physicists and metallic uranium.

The latter had been made in large quantities — tons — by the Auer company, a subsidiary of the Degussa chemical company, in part by using slave labor from the concentration camps. The Soviets were able to take home about 300 tons of processed uranium.

Thanks to espionage, the Soviets knew where to look and whom to look for. (The United States had a similar program, called Alsos, that competed for many of the same people.) The Soviets collected a talented inventor of electronic devices named Manfred von Ardenne. He had made a great deal of money and had a large estate outside Berlin. On it he had a laboratory with a nuclear program financed by the German Post Office.

In May 1945 the Soviets shipped Dr. von Ardenne east with some of his colleagues and equipment from his laboratory. By June he had set up a laboratory, Institute A, in Sukhumi on the Black Sea in Georgia. Nearby, another laboratory, Institute G, had been set up by Gustav Hertz, a German physicist of Jewish ancestry who had shared the 1925 Nobel Prize in Physics. Dr. Hertz had been working out of sight at the Siemens company during the Nazi period.

The Sukhumi scientists were ordered to find methods of separating uranium isotopes. Dr. Hertz chose to study gaseous diffusion. Uranium hexafluoride gas is forced through tiny pores in a membrane to separate out the lighter isotope, uranium 235, which is needed for weapons. Dr. von Ardenne tried separation by using electromagnetic fields, a technique also used in the American uranium separation program at Oak Ridge, Tenn.

A third group, headed by a physicist named Max Steenbeck, investigated the centrifuge. Dr. Steenbeck, who had been arrested by the Soviets and put in a concentration camp in Poland, had previously been in charge of research for the division of Siemens that dealt with aircraft. While in captivity he wrote a letter to the Soviet secret police, the N.K.V.D., explaining his scientific background; he also ended up in Sukhumi. Dr. Steenbeck began with a small group and some antiquated Soviet centrifuges that certainly could not have been used to separate uranium isotopes.

In the summer of 1946 they were joined by an Austrian physicist named Gernot Zippe. Dr. Zippe had been in the Luftwaffe during the war and, after having been taken prisoner in the summer of 1946, he went from a prison camp to the relative luxury of Sukhumi, thanks to the initiative of Dr. von Ardenne. Neither Dr. Zippe nor Dr. Steenbeck had ever worked on centrifuges, but within two years they created the best centrifuge in the world — although at the time they did not know it. (To give some idea of its capacity, a typical laboratory centrifuge makes a few thousand rotations a minute. The Zippe centrifuge — this is the common name, although Dr. Zippe himself refers to it as the "Russian centrifuge" — can do 90,000 rotations a minute.)

In 1956, Dr. Zippe was allowed to return to Germany. Although he was not permitted to take any documents with him, he was able to reconstruct his work, and began consulting for various companies interested in centrifuges, including Degussa.

The private German companies, including the part of Degussa that was doing centrifuges, became nationalized in 1964. But in 1970 these national companies became part of an international consortium called Urenco. The Dutch had a branch in Almelo and, in 1972, a Pakistani metallurgist named Abdul Qadeer Khan joined it. Fluent in both Dutch and German, he was given the job of translating the German centrifuge plans into Dutch. He became familiar with both the German and Dutch versions of the Zippe centrifuge.

In 1974, India successfully tested a nuclear device, and Pakistan's president, Zulfikar Ali Bhutto, put out a call to all the scientists in the Pakistani diaspora to return home and help make a bomb. Dr. Khan was one who answered and he brought with him the stolen plans for the Zippe centrifuge. This is not the place to go into the details of Dr. Khan's activities, which in the end involved a variety of countries from Libya to China — to say nothing of Iran, whose centrifuges also have a Pakistani origin.

By the 1990s Dr. Khan was exchanging weapons information with the North Koreans for similar information about their long-range rockets. We know he gave them plans for the centrifuge and probably sample centrifuges. We do not know whether he gave them plans for a nuclear weapon, as he had done for the Libyans.

We also do not know to what extent the government of Pakistan was complicit in this. The army certainly was, and military aircraft were used to transport material. Pakistan has denied any involvement; Dr. Khan is under house arrest and no foreign intelligence representatives have been allowed to interview him.

The North Koreans have reluctantly admitted that they have a centrifuge program but have not let any foreign observers see it. Such a program, if limited, would have been allowed by the Nuclear Nonproliferation Treaty. But

the North Koreans would have had to declare it to the International Atomic Energy Agency, which then would have had the right to inspect it.
This they did not do. Perhaps they enjoy the ambiguity. My own guess is that if they have an active program it is relatively small. And while so far the agreement we have made with them does not say anything about this program, clearly we must eventually insist on knowing its extent. The route that led from Soviet prisoners of war to the centrifuges in North Korea is so implausible that if one put it in a novel, no one would believe it.
Jeremy Bernstein is the author of the forthcoming "Plutonium: A History of the World's Most Dangerous Element."
http://www.nytimes.com/2007/03/10/opinion/10bernstein.html

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New York Times
March 12, 2007
Pg. 11

Iran's President Wants To Tell Security Council Of Nuclear Aims

By Nazila Fathi
TEHRAN, March 11 — President Mahmoud Ahmadinejad of Iran wants to take part in a meeting of the United Nations Security Council to brief member states about Iran's nuclear program, a government spokesman said Sunday on state-run television.
"The president of Iran plans to speak in a possible meeting of the Security Council on Iran's nuclear program to defend the right of the Iranian nation to use peaceful nuclear technology," said the government spokesman, Gholamhossein Elham.
No further details were disclosed in that report about the timing of the visit.
But the ISNA student news agency reported that a Foreign Ministry spokesman, Mohammad Ali Hosseini, confirmed the news and added, "The president is planning to take part in the next meeting of the Security Council."
It is commonplace for foreign ministers and heads of state to address the Security Council. If they are not from one of the 15 countries represented on the Council, but their country is being discussed in the debate, it is customary for a representative of that country, sometimes the head of state, to be invited to speak.
The five permanent members of the Security Council — Britain, France, China, Russia and the United States — and Germany are considering imposing tougher sanctions on Iran after it ignored a deadline by the Council to halt its uranium enrichment program.
The United States and some Western governments accuse Iran of trying to develop nuclear weapons. But Iran contends that its program is peaceful and for energy purposes.
"The president intends to discuss and explain Iran's position," Mr. Hosseini was quoted as saying by the ISNA.
Tehran on Sunday also accused Russia of "politicizing" preparations for a nuclear power plant that Russia was building for Iran in the southern city of Bushehr.
Russia has delayed completing the plant, giving various reasons. Last month, in a dispute over whether Iran could make its payments in euros instead of dollars, the Russian firm leading the construction said Iran had not been able to make its payments. Iran says that it has made all of its payments.
Iran and Russia agreed last year that nuclear fuel would begin to be delivered to Iran in March and that the plant would begin operating in September and produce energy in November.
http://www.nytimes.com/2007/03/12/world/middleeast/12iran.html

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The New Yorker

THE UNTHINKABLE

Can the United States be made safe from nuclear terrorism?

By Steve Coll
March 12, 2007
In October, 2005, a radiation sensor at the Port of Colombo, in Sri Lanka, signalled that the contents of an outbound shipping container included radioactive material. The port's surveillance system, installed with funds from the National Nuclear Security Administration, an agency within the Department of Energy, wasn't yet in place, so the container was loaded and sent to sea before it could be identified. After American and Sri Lankan inspectors hurriedly checked camera images at the port, they concluded that the suspect crate might be on any one of five ships—two of which were steaming toward New York.

Sri Lanka is a locus of guerrilla war and arms smuggling. It is not far from Pakistan, which possesses nuclear arms, is a haven for Al Qaeda, and has a poor record of nuclear security. The radiation-emitting container presented at least the theoretical danger of a "pariah ship," Vayl Oxford, the director of the Domestic Nuclear Detection Office, which is part of the Department of Homeland Security, said. It seemed plausible, if unlikely, that Al Qaeda or rogue Pakistani generals might load a bomb onto a cargo vessel. Within days, American satellites located the five suspect ships and intelligence analysts scrutinized their manifests; a team at the National Security Council took charge. One ship, it learned, was bound for Canada, and another for Hamburg, Germany. The White House decided to call in its atomic-bomb squad, known as NEST, the Nuclear Emergency Support Team—scientists who are trained to search for nuclear weapons. One team flew to Canada and a second to Europe, where it intercepted one of the ships at sea before it could reach Hamburg. They found nothing.

The United States Coast Guard stopped the two New York-bound ships in territorial waters, about ten miles offshore; from that distance, if there was a nuclear weapon on board a detonation would cause relatively little harm. Scientists boarded the vessels, shouldering diagnostic equipment, but these ships, too, turned out to be clean; as it happened, the offending vessel was on an Asian route, and its cargo was scrap metal mixed with radioactive materials that had been dumped improperly. The entire episode, which was not disclosed to the public, lasted about two weeks.

This sometimes nerve-racking exercise resulted in no more than the disposal of some radioactive waste. It was also the first major defensive maneuver triggered by a shield that the United States is attempting to build as a defense against a clandestine nuclear attack. The idea, in essence, is to envelop the country in rings of radiation detectors and connect these sensors to military and police command centers, which would then respond to unexplained movements of nuclear material. The project, comparable in ambition to ballistic-missile defense, is the first of its kind in the atomic age. The plan has already attracted criticism from some scientists and defense strategists, primarily because, as with missile defense, the project promises to be expensive and would require leaps of ingenuity to overcome technical problems presented by the laws of physics.

Still, with little public discussion this "layered defense," as it is described by its proponents, is being deployed. The federal government has distributed more than fifteen hundred radiation detectors to overseas ports and border crossings, as well as to America's northern and southern borders, domestic seaports, Coast Guard ships, airports, railways, mail facilities, and even some highway truck stops. More detectors are being distributed each month. NEST and the Federal Bureau of Investigation maintain a permanent team to respond to events in Washington and along the Northeast Corridor; a second team trained to dismantle nuclear weapons is based in Albuquerque, and eight other teams able to diagnose radioactive materials operate on continuous alert elsewhere in the country. Since the terrorist attacks of September 11, 2001, NEST teams have been deployed about twice a year because of specific threats reported by intelligence agencies, including at least two instances, apart from the Sri Lankan episode, where they boarded a ship approaching the United States. NEST units also discreetly screen vehicles, buildings, and people at designated events such as political conventions and the recent N.B.A. All-Star Game, in Las Vegas. In the United States alone, the sensors generate more than a thousand radiation alarms on an average day, all of which must be investigated.

The world, it turns out, is awash in uncontrolled radioactive materials. Most are harmless, but a few are dangerous, and many detectors are still too crude to distinguish among different types of radiation; they ring just as loudly if they locate nuclear-bomb material or contaminated steel or, for that matter, bananas, which emit radiation from the isotope potassium-40. So far, the result has been a cacophony of false alarms, which, in most cases, are caused by naturally occurring radiation that has found its way from soil or rock into manufactured products such as ceramic tiles. In addition, people who have recently received medical treatments with radioactive isotopes such as thorium can set off the detectors. At baseball's All-Star Game in Detroit in 2005, unobserved NEST scientists screened tens of thousands of fans entering the stadium, and their sensors rang just once—reacting to the former Secretary of Energy Spencer Abraham, who was radioactive from a recent doctor's visit.

Detritus from nuclear commerce that has slipped through American and international regulatory systems is another periodic source of alarms, and one that has proved to be a greater cause of concern. Virtually none of the loose material detected so far would be useful to a terrorist seeking to build a fission weapon—a bomb of the sort that was dropped on Hiroshima. A disquieting fraction of it, however, might be useful for what the American defense bureaucracy calls a "radioactive dispersal device," more commonly known as a dirty bomb. There is recent evidence, too, that Al Qaeda-inspired radicals are pursuing such a weapon.

The term "dirty bomb" can refer to a wide variety of devices, but generally it describes one that would use a conventional explosive such as dynamite to release radioactive material into the air. The initial explosion and its subsequent plume might kill or sicken a dozen or perhaps as many as a few hundred people, depending on such factors as wind and the bomb-maker's skill. If the weapon was particularly well made, employing one of the most potent and long-lived types of radioactive materials that are used in medicine and in the food industry, it might also

cause considerable economic damage—perhaps rendering a number of city blocks uninhabitable. Radioactive ground contamination cannot easily be scrubbed away, so it might be necessary to tear down scores of buildings and cart the rubble to disposal sites. It's easy to imagine what the impact of such an attack would be if the contaminated area was, say, a quarter of the East Village, or the Seventh Arrondissement of Paris.

Charles Ferguson is a former nuclear submarine officer trained in physics; he left the Navy for a career in security studies and is currently a senior fellow at the Council on Foreign Relations. In 2003, he co-wrote an unclassified report titled "Commercial Radioactive Sources: Surveying the Security Risks." About two years later, F.B.I. agents working on an international terrorism case asked to meet with him. They brought a document showing that some of his report had been downloaded onto the computer of a British citizen named Dhiren Barot, a Hindu who had converted to Islam. Barot, it turned out, had been communicating with Al Qaeda about a plan to detonate a dirty bomb in Britain, and he had used a highlighting pen on a printout of Ferguson's study while conducting his research.

The report described how large amounts of certain commercial radioactive materials might pose a danger to a terrorist who tried to handle them. "This seems to have worried him," Ferguson told me, referring to Barot, "so he decided to look at smoke detectors." Some detectors contain slivers of americium-241; the isotope's constant emission of radiation creates a chemical process that screens for smoke. Barot informed his Al Qaeda handlers that he was thinking about buying ten thousand smoke detectors to make his bomb. In fact, to make a device that would be even remotely effective, Ferguson said, he would have had to buy more than a million. "Either his reading comprehension was poor or he was evading the assignment," Ferguson told me. In Britain, last October, Barot pleaded guilty to terrorism-related charges.

Barot appears to have been only marginally more competent than Jose Padilla, the hapless American convert to Islam who travelled to Pakistan, met with Al Qaeda leaders, and then flew to the United States, where he was arrested amid great fanfare, in June 2002. John Ashcroft, then the Attorney General, held a press conference in which he accused Padilla of "exploring a plan" to build a dirty bomb, charges that were later omitted from an indictment against him.

The Barot and Padilla cases raise a strategic question—whether it is worth setting up an expensive, imperfect system whose effectiveness would be greatest against slow-witted terrorists. The Bush Administration is now spending about four hundred million dollars annually on radiation-detector research, but nuclear physicists who have studied the technology disagree about how discriminating these sensors might become. One point on which everyone agrees, however, is that, of all the potentially dangerous radioactive isotopes, it will always be most difficult to detect highly enriched uranium-235, one of the two materials, along with plutonium, used to make fission weapons. Unless it is being compressed to explode, highly enriched uranium is a low-energy isotope that does not emit much radioactivity—it is "dull," in the lexicon employed by scientists in the field. This makes it relatively easy to shield inside lead casing, or to mask by surrounding it with brighter isotopes. Plutonium, by comparison, is fairly bright, and many of the most dangerous isotopes that could be used in dirty bombs, such as cesium 137 and cobalt 60, are brighter still. Radiation sensors, then, will always be more effective against a Dhiren Barot than against, say, the Pakistani nuclear scientist Abdul Qadeer Khan, a metallurgist who has spent many years studying fission weapons and highly enriched uranium, as well as the challenges of international smuggling.

It is common, in defense studies, to evaluate an adversary on the basis of capability and intent. Pakistan has a nuclear-weapons capability, but its government, however fragile it may be, is presumed to have no hostile intentions toward the United States. Al Qaeda, on the other hand, has demonstrated hostile intentions but has little known nuclear capability. Osama bin Laden has declared that the acquisition of nuclear weapons is a religious duty, and it is well documented that he tried to buy uranium during the mid-nineteen-nineties while he was living in Sudan. (Like many other would-be purchasers of black-market nuclear material, he apparently fell victim to a scam.) After September 11th, bin Laden met with Pakistani nuclear scientists to discuss weapons issues. More recently, Al Qaeda-inspired radicals have sought nuclear materials. "We know they have a significant appetite and they have been searching for different materials, in different venues, for the past several years," Vahid Majidi, an assistant director of the F.B.I., who is in charge of the bureau's newly formed weapons-of-mass-destruction directorate, told me. "The question becomes our vigilance and their ability to execute."

Last September, the Nuclear Threat Initiative posted a translation of a message that appeared on the Web and was attributed to Abu Ayyub al-Masri, the leader of Al Qaeda in Iraq. The speaker called for experts in "chemistry, physics, electronics, media and all other sciences, especially nuclear scientists and explosives experts." He continued, "We are in dire need of you.… The field of jihad can satisfy your scientific ambitions, and the large American bases are good places to test your unconventional weapons, whether biological or dirty, as they call them."

The available evidence, then, suggests that while jihadi leaders might like to acquire a proper fission weapon, their pragmatic plans seem to run to dirty bombs—a more plausible ambition. Among other things, the international

nuclear black market holds more promise for dirty-bomb builders than for those who are interested in fission weapons. In all the cases of nuclear smuggling reported to the International Atomic Energy Agency since the collapse of the Soviet Union, none have involved significant amounts of fissionable materials. (There have been at least two cases in which a seller possessing small amounts of highly enriched uranium promised that he could get much more but was arrested before the claim could be tested; the most recent of these occurred in the former Soviet republic of Georgia, in 2006.) By comparison, the I.A.E.A. has recorded about three dozen black-market smuggling incidents through 2004 involving radiological isotopes in quantities that would be useful for a destructive dirty bomb, according to European diplomats who have analyzed the records. It would not be simple to build a damaging device with these materials. Still, Peter Zimmerman, who served as the chief scientist of the Senate Foreign Relations Committee from 2001 to 2003, said, "I think there are Al Qaeda people who, given finely divided material, could think of very creative and malicious ways to use it. Why hasn't it happened? The answer is we've been lucky."

The Bush Administration has not assigned the same urgency to the dirty-bomb threat that it has to the threat of a terrorist attack using a fission weapon. Fred Iklé, who served as the Under-Secretary of Defense for Policy in the Reagan Administration and has consulted on homeland-defense matters for the Bush Administration, told me that he and his colleagues have been considerably more concerned about a full-blown nuclear-weapons conspiracy, which would have the potential to trigger a worldwide economic depression and force millions of Americans to flee major cities. By contrast, even the worst dirty-bomb event, Iklé said, would be less than "a Katrina."

Last year, analysts at the Department of Homeland Security divided the threat of a weapon-of-mass-destruction attack against the United States into two categories, "catastrophic" and "limited," according to Maureen I. McCarthy, a senior adviser in the department's intelligence and analysis office. A catastrophic attack, in this taxonomy, would cause ten thousand or more casualties and fifty billion to a hundred billion dollars in economic damage, and would produce a "major global policy shift," McCarthy said last November, at an intelligence symposium. A limited attack might produce a hundred to a thousand casualties and would be confined to a single region, although it might also have "global political consequences." The D.H.S. intelligence analysts placed a fission-weapon attack, the use of some biological agents, and an outbreak of hoof-and-mouth disease in the catastrophic category (the latter in part because it might require the closure of national borders for up to ninety days). Dirty bombs fell into the limited category. From the very beginning, fear of a fission bomb and its consequences has influenced American thinking about the costs and benefits of possible defenses against nuclear terrorism.

The Washington office of Los Alamos National Laboratory is in a modern building on the south side of the Mall, near a busy hotel. Richard Wagner has a spacious office on the second floor, which he has filled with color photographs of nature scenes. He is seventy years old, a trim man with a white mustache and a calm, precise demeanor. Wagner is a physicist who entered the field of nuclear weapons during the nineteen-sixties. He rose to become the deputy director of Lawrence Livermore National Laboratory and, for five years during the Reagan Administration, served as the Pentagon's principal civilian adviser on nuclear weapons. He chaired an intelligence advisory board at the Pentagon during the Clinton years. At that time, he undertook the first of three studies on how the United States might erect a defense against a nuclear sneak attack. As much as anyone, Wagner is convinced of the need to employ radiation sensors in a national shield.

Wagner recalled, when I visited him on a recent wintry afternoon, that his interest in nuclear terrorism began during the early nineteen-seventies, when an F.B.I. agent arrived at Livermore carrying an extortion note. The F.B.I. man wanted to know if the threat, which involved a plan to blow up a nuclear device, was plausible. It was not, as it happened, but the incident, and several others like it during that period, got Wagner and a colleague at Livermore, Bill Nelson, thinking about what they would have done if they ever faced a serious case.

The subject had received remarkably little attention. In 1946, Robert Oppenheimer, the physicist who supervised the building of the first atom bombs, told Congress that three or four men "could destroy New York" by sneaking a nuclear weapon into the city. When a senator asked how such a weapon, smuggled in a crate or a suitcase, could be detected, Oppenheimer replied, "With a screwdriver." It was not until the early seventies that the issue was revived inside the defense bureaucracy—stimulated, in part, by the publication of John McPhee's "The Curve of Binding Energy," which drew on interviews with the theoretical physicist Theodore B. Taylor, an innovator in nuclear-weapons design. Taylor spoke about the possibility that an individual, perhaps an American citizen, could build a fission bomb. In one striking passage, he holds a sliver of metallic uranium-235 in his hands as he speculates, "If ten per cent of this were fissioned, it would be enough to knock down the World Trade Center." As a result of these warnings, Wagner recalled, "the government was getting more sensitive to the possibility that this might happen."

At the time, the dominant fear was that a bomb-builder would issue an extortion demand; the government would then have to find him in a hurry and dismantle his weapon. "Our job was to search, and then, if we ever found

anything, do something safe with it," Wagner said. "It was the threat object that was fixed, and we were moving. And the idea of it being the other way around, the threat object moving toward the U.S. or around the U.S., and the detectors being fixed, which is part of the current paradigm—I don't remember that as being much in our thinking." To address such possibilities, Wagner helped to create NEST.

Wagner returned to the subject as part of a 1996 Summer Study sponsored by the Pentagon. The Soviet Union had collapsed, and black-market smuggling of nuclear materials had become an acute concern in the Clinton Administration. This time, Wagner was influenced by Fred Iklé, who has adapted some of Ted Taylor's concerns during the post-Cold War period. (In 2006, Iklé published a book entitled "Annihilation from Within: The Ultimate Threat to Nations.") Iklé's work, Wagner said, made him aware that a plausible attacker might be a terrorist group or a nation-state acting by covert means; the threat now, therefore, "was not just a nut, but it was part of a strategic sea change."

Wagner presented his ideas for a national-defense system to Defense Secretary William Cohen. He proposed an approach based on linked, computerized, intelligent radiation sensors—a system that would involve a very large number of detectors. A version of this concept had been secretly tested in North Las Vegas, where scientists drove through webs of linked sensors with a radioactive device; each time one pinged, the computers would analyze an accumulating portrait of the trajectory of the radioactive device. Cohen said he feared that the system would run afoul of the Posse Comitatus Act, which limits the military's intervention in domestic security. Jamie Gorelick, a former deputy attorney general who had become a Pentagon adviser, disagreed, but Cohen replied, as Wagner recalled it, " 'Well, it may not be illegal, but, man, it would be bad politics for D.O.D. to be seen to be getting ready to go out there and mess around in the U.S., in the states.' And Jamie said, 'Think what the politics would be like the morning after the explosion.' And, literally, Bill Cohen—I mean, good guy, I thought, a good Secretary of Defense—just couldn't say anything more.… And so nothing happened." An aide to Cohen said that he did not recall the discussion.

In March of 2002, Wagner was appointed to lead a new Defense Department task force on the same subject. Its members interviewed more than seventy scientists and analysts at the C.I.A., the Defense Intelligence Agency, and the national nuclear-weapons laboratories. Wagner and his colleagues chose "to concentrate almost exclusively on the nuclear-explosive threat," treating dirty bombs as a "lesser-included case," according to the final report, which was published in June of 2004. "A very rough estimate for civil detector deployments for all layers in the United States and overseas—along roads, at ports and airports, around and within cities, etc.—is one hundred thousand to four hundred thousand detectors," the report states. Depending on the model chosen, the cost of that many detectors would easily exceed ten billion dollars.

Wagner recommended an ambitious research program to address the problem of detecting highly enriched uranium; he foresaw a system that would be close to foolproof against a sophisticated attacker, perhaps one who had access to the resources of a hostile government. The task force acknowledged that even the best radiation-sensor system imaginable would be vulnerable to creative enemies, but added that "over the course of history, defenses that are far from perfect have played vital strategic roles."

Wagner told me that his faith in radiation-detection technology derives in part from the progress that has been made in cosmic-ray and particle physics. "Today, if you're looking for a neutrino from a pulsar in the next galaxy," he said, a scientist "can detect one event per year and reject the millions of background events." The goal of new defense research, he continued, should be to bring "advanced technologies out of the academic community" and learn how to apply them at border posts and truck stops.

It should be possible, Wagner said, by way of example, to detect the dull signature of highly enriched uranium by spraying out other kinds of radiation, perhaps from an aircraft, and then search for an echo, roughly the way sonar works—an approach that's likely to create health problems for civilian populations. Even if that difficulty could not be overcome, he continued, such technology could be useful in enemy territory if it was necessary to do a quick search for hidden nuclear bombs. Indeed, Fred Iklé told me that the Pentagon is now conducting this sort of research.

Wagner presented his grand plan to Donald Rumsfeld, then the Secretary of Defense, in early June, 2004. Ronald Reagan, the political father of ballistic-missile defense, had just died, and Rumsfeld, who was enthusiastic about Wagner's ideas, said that he would begin discussing the plan with Cabinet members when he saw them at Reagan's funeral. With support from Vice-President Dick Cheney, five months later the White House approved the idea, and the Department of Homeland Security decided to roll out detectors immediately, even though research into the more difficult problems of radiation sensing had barely begun. Because there was nothing else available, the department initially bought commercial machines of the type used, for example, by American steel mills to prevent contaminated scrap from entering their facilities. To Wagner's disappointment, the number and sophistication of these sensors fell considerably short of what had been envisioned.

From Hadrian's Wall to the Maginot Line to ballistic-missile defense, Emperors and Presidents have often preferred dramatic defensive innovations, even implausible ones, to incremental improvements. Radiation sensing is, of course, a passive defense, similar to a fence. Missile defense, by contrast, may be destabilizing, because it encourages states that hold missiles to improve their arsenals. Widespread radiation detection might prompt terrorists and criminals to improve their smuggling techniques, but it cannot, in itself, change the military balance.

Jeffrey Lewis, a nonproliferation specialist at the New America Foundation, said that radiation sensors had probably attracted support within the Bush Administration because they appeal to the instincts of defense thinkers who want to act boldly in the world but are also, at heart, isolationists. "You don't have to go mess with the difficult diplomacy of getting the Pakistanis to secure their material if you can ring the country with interceptors, or ring the country with detectors," he said. "Even if it's ineffective, it's something that we can do entirely ourselves—that's just really appealing to these guys."

Critics of Wagner's ideas say that he is too optimistic about the long-term potential of sensor technology, and that heavy spending on detectors will divert resources from the more important work of securing or eliminating dangerous nuclear materials—plutonium, highly enriched uranium, and dirty-bomb components. There are, for example, roughly a hundred and thirty-five civilian research reactors worldwide, including a number in the United States, that continue to use highly enriched uranium; some of these facilities have worrisome security. Sensors will never be effective enough against smuggled highly enriched uranium to justify the cost, Thomas Cochran, the director of the nuclear program at the Natural Resources Defense Council, argues. And while detectors might be more effective against dirty-bomb isotopes, Cochran says, the risks don't justify the expenditures. "That's not to say you should do nothing, but most of these things are going to be caught by good intelligence and not by the borders," Cochran said. He believes that the country would be much safer much faster if the federal government would concentrate on the painstaking challenge of reducing the number of nuclear weapons and materials at home and abroad.

Bush Administration officials I spoke with said that they are already spending more than one billion dollars each year to secure nuclear materials in Russia and elsewhere. "Obviously, the very first thing you want to do is make sure that nuclear warheads and special nuclear material within known facilities is secure," William Tobey, who oversees nonproliferation programs at the National Nuclear Security Administration, said. "But work is either under way or complete at all such facilities that we've been allowed access to in Russia. So, then, once you've got that work under way, you want to make sure that if, for some reason, your systems are not perfect—and our systems are human, so they're likely not to be perfect—that you've got another way of managing the problem. And that becomes detection at borders."

The defense bureaucracy that George W. Bush and Dick Cheney have built seems to gravitate toward military men and others who share Cheney's sense that the terrorist attacks of September 11th were transformational. Joseph Krol, who oversees NEST, for example, is a retired rear admiral who was in charge of Navy operations at the Pentagon when American Airlines Flight 77 struck the building; twenty-eight men and women under his command died that day. "The idea of a nuclear event is a low-probability event, but we have taken it seriously, to the extent that we have developed a real capability," he told me. "You could look at it and say, 'Well, maybe you're spending a little too much money on this low-probability event.' But the outcomes of such an event are so disastrous that it's worth our attention."

On September 9, 2004, a division of Halliburton dispatched from Russia to Houston, via air freight, a diagnostic tool used in oil fields which contained eighteen and a half curies of americium-241. (A curie is a measure of radioactivity.) That much americium, a Department of Energy official said, "would make a pretty nasty dirty bomb." The tool passed through Amsterdam and Luxembourg and then cleared Customs at John F. Kennedy International Airport on October 9th, where it was supposed to be picked up by a freight company and sent on to Houston. But the shipment disappeared. Nobody at Halliburton, which relied in part on outside shipping contractors, noticed that it was missing until February 7th. Halliburton's Radiation Safety officer contacted the Nuclear Regulatory Commission's operations center the following day. The F.B.I. immediately sent agents to search for the missing tool, according to documents and statements later obtained by the staff of Representative Edward J. Markey, of Massachusetts. By using surveillance-camera footage at Kennedy, the agents tracked the shipment to a warehouse outside Boston, where the americium had been trucked by mistake and set aside. A subsequent N.R.C. inspection of Halliburton found that workers in the company's shipping department were "often unaware of the specifics of the routing of each shipment" of radioactive materials.

The Bush Administration's fixation on radiation sensors has not been accompanied by a comparably ambitious drive to fund, for example, increased inspections of companies that hold commercial nuclear material that could be used to build dirty bombs, and, as a result, the country's regulatory system in this area remains strikingly weak. For decades, the purpose of government regulation of trade in portable nuclear materials was to protect workers and the public from the effects of accidental exposure to radiation; much of the day-to-day responsibility rested on

compliance by private businesses. Until September 11th, the possibility that a terrorist might mount an attack using commercial radioactive isotopes received very little attention. In 2002, after it had become clear that Al Qaeda or its followers might be seeking radioactive material, the N.R.C. and the Department of Energy formed a task force of physicists and engineers to study precisely what kinds, in what amounts, might be used effectively for dirty bombs. The I.A.E.A. conducted a similar study. The scientists who participated struggled with questions of bomb engineering and malicious intent which they had never before considered; among other things, they had to decide what level of skill could reasonably be attributed to an attacker. Edward McGaffigan, a commissioner at the N.R.C., said they assumed that they would be dealing with someone who knew some science— "Not super-smart, but certainly well above Jose Padilla." The result, in 2003, was a new system for identifying which materials were truly dangerous.

The final official list contains only fifteen risky isotopes. (Other commercial isotopes, such as polonium, which was employed in London last autumn to murder the former Russian spy Alexander Litvinenko, can kill individuals or small groups but cannot cause damaging long-term ground contamination; these materials are not classified as a security risk.) Because of their widespread availability and their potency, the isotopes of greatest concern are cesium, cobalt, and americium. There are, for example, several hundred irradiation machines in the United States that employ large amounts of cobalt and cesium, and thousands more of these machines are scattered around the world under light control—Ethiopia has at least one, and Ukraine has at least a hundred. Investigators in Markey's office, searching the Web, found one such machine, with its entire stockpile of cobalt, available for free, provided that a customer would haul the material away; the machine was in Lebanon.

In the United States, between 1994 and 2005, the N.R.C. recorded sixty-one domestic cases of stolen or lost isotopes in amounts that would clearly be useful to someone making a dirty bomb, although the majority of these involved iridium-192, which loses its potency fairly quickly. It is not clear whether the commission's records describe all or even most of the problem cases. Among other things, the N.R.C.'s records of materials that entered the American marketplace before 1994 are generally unreliable. Problematic batches from earlier eras are missing. Some are associated with the bizarre case of the Gammator, a nineteen-sixties-era research contraption filled with dangerous amounts of cesium that was distributed by the Atomic Energy Commission to schools, hospitals, and private firms to promote nuclear understanding. Several Gammators sent to New York and New Jersey, as well as other places, have never been found.

There is continued demand for isotopes that can attack cancer cells, sterilize medical or industrial instruments, or efficiently detect cracks in critical metal structures, such as oil pipelines, in remote locations. In the United States, there are now about fifty-four thousand licensed batches of radioactive materials that could be used in a dirty bomb, according to the N.R.C. The N.R.C. recently issued classified orders to American licensees—hospitals, clinics, universities, and corporations—instructing them to improve on-site security, but the commission lacks the budget to follow up with frequent inspections. Most of the N.R.C.'s revenue comes from fees extracted from nuclear utilities and businesses, not from Congress, and the nuclear industry lobbies heavily to keep its payments down.

Under the country's patchwork system of state and federal regulation, most companies that hold dangerous commercial materials are inspected not by the N.R.C. but by thirty-four "Agreement" states, which have varying priorities and often inadequate resources. In December, 2005, investigators with the Government Accountability Office, who were testing the reliability of the country's radiation-detector system, successfully imported at simultaneous crossings on the Canadian and Mexican borders a dangerous quantity of dirty-bomb material by using false license and freight documents. Radiation sensors rang, but Customs officials did not question the validity of the import papers and, acting on their own discretion, allowed the material to go through. Even today, some of the states that are supposed to help Customs check such license records do not staff their operations centers around the clock.

Companies and hospitals with large amounts of cobalt and cesium have no easy way to dispose of these substances if they cut back on a line of research or go out of business. "There is absolutely no way to dispose of that material commercially—I think that's a real problem," said Julia Whitworth, who leads a project at Los Alamos National Laboratory to recover and secure these "orphaned sources." In the past three years, Los Alamos has collected about five hundred large batches of cobalt, an indication of how many unwanted units of this substance are around. Licenses granted each year by the N.R.C. only exacerbate the problem, because the federal government has never built adequate disposal sites. Some companies just dump this material illegally or inadvertently. So much discarded radioactive material courses through the country's scrap-metal piles that steel companies face a serious risk of contaminating their plants and workers by accidentally melting hot junk. There have been thirty-five such accidents in the United States since 1982; cleanup costs can run as high as twenty-four million dollars per event, according to John Wittenborn, an attorney who represents the steel industry.

The rules governing commercial materials make up the small print in the *Federal Register*. In America since September 11th, the political rewards and the big budgets have gone not to those who want to emphasize stricter regulations but to those who promise to catch terrorists in the act.

The Domestic Nuclear Detection Office has a new-car smell. Its growing staff—about two hundred scientists, F.B.I. agents, military officers, and other officials—recently moved to larger quarters, a granite-and-glass building six blocks from the White House. Vayl Oxford, the director, who was appointed by President Bush, is a 1974 graduate of West Point. He is a mandarin in the national-security bureaucracy who wields influence by accumulating knowledge about complex, classified government operations, but whose role is largely invisible to the public. Oxford retired from the military in 1992; since then he has worked in the nuclear-weapons field, in such fictional-sounding divisions of the Pentagon as the Defense Special Weapons Agency. For a time, he studied the blast effects of nuclear bombs, and later, during the Clinton Administration, he worked on what he described as "the offensive aspects of counter-proliferation," meaning that he helped to evaluate weapons that could destroy an adversary's chemical, biological, or nuclear facilities.

Oxford speaks in the clipped vernacular of his specialty; he refers to fission bombs and dirty bombs together as "rad-nuke," and to the problem of chemical and biological weapons as "chem-bio." Explaining his thinking after September 11th, he said, "We always thought that the rad-nuke issue was a prevention issue, as opposed to chem-bio, which is a lot about how fast and how effectively you can respond to an attack."

We met recently in his office, where the model of a jet fighter on which he once worked is prominently displayed. He told me that his mandate from the White House has been "to develop what we called 'a global nuclear-detection architecture.' " Oxford said that he sees threats from varied enemies, actual and hypothetical. "You've got the influence of A. Q. Khan—that, in my mind, is pretty devastating," he said. "I worry about the fragility of a government in Pakistan. What happens to its arsenal? I worry about weird uses of North Korean weapons, as opposed to a ballistic-missile attack that is easily attributable.… A lot of people think that at D.H.S. all we're focussed on is Al Qaeda. That's not here. This is looking at the nuclear threat from a broader perspective, and trying to figure out how to deal with it."

To confront the threat of a dirty-bomb attack, Oxford favors an improved system for real-time tracking of all commercial nuclear materials in the United States, perhaps using tags that can be monitored by satellite. His office is urging manufacturers of large commercial sources to fortify their machines against attack, and he would like to see some materials replaced with less risky alternatives. Such campaigning has added a new degree of urgency to the Bush Administration's assessment of the threat. Later this year, the federal government will hold its annual, classified exercise involving top officials (known as TOP-OFF), in which these officials rehearse responses to a major disaster scenario. This year's scenario, an official familiar with the planning told me, will posit three simultaneous dirty-bomb explosions.

Radiation detectors paid for by the Domestic Nuclear Detection Office currently screen about ninety per cent of cargo entering the United States from Canada and Mexico, as well as a similar percentage of private cars and trucks; they are also used to check about ninety per cent of incoming shipping containers. Oxford said that he plans to oversee the installation of enough detectors to screen ninety-eight per cent of imported maritime cargo by the end of the year. Creative terrorists, like drug smugglers, might then try to enter with small boats, or sneak across the land border, he said. Therefore, he is also trying to develop a more mobile system of radiation sensors on Coast Guard vessels, and at interior locations such as weigh stations, bridges, and tunnels.

Oxford is promoting the next generation of sensor, called the Advanced Spectroscopic Portal, which has been undergoing tests in New York and at the Nevada Test Site. This machine can distinguish bananas from cesium, but it will be no more sensitive than current detectors in its ability to locate highly enriched uranium, a Department of Energy official involved with the detection program said.

Finding highly enriched uranium is "a really hard problem," Oxford conceded. Customs inspectors already use imaging equipment to scan for unusual shielding inside some shipping containers, but his office is supporting research to investigate more mobile and effective systems. "We agree that solving this through passive systems alone is not sufficient," Oxford said. He compared the challenge to that undertaken during fifty years of research to support anti-submarine warfare during the Cold War. There, too, the challenge, he said, was to "extract unique signatures out of a very cluttered environment. It's not just the detector itself but the software algorithm and the signals-processing" that make such a system more or less effective.

Even crude or faulty sensor systems might expose a sophisticated attacker, Oxford said. "I don't think it's ever possible to provide a hundred-per-cent shield; I don't think ballistic-missile defense ever believed that they would be able to do that. I think that every step and every defensive layer that we put in complicates an adversary's plan to be able to do this, and gives us other opportunities, to use other means…to try to identify that something may be planned."

Fifteen years ago, many feared that a nuclear weapon might be bought or stolen by terrorists in the former Soviet Union. The country had large stockpiles of fission weapons and highly enriched uranium that were, in some cases, so poorly inventoried that nobody could say for sure how much material existed. Although Russia's resurgent security police and years of investment in nuclear security by the United States and other countries have reduced the

dangers, international organized-crime networks still thrive in Russia and the smaller countries on its southern rim. The A. Q. Khan case has led some in the American defense bureaucracy to conclude that Pakistan is now a greater problem than Russia. India has large amounts of fissile material at civilian facilities and is a site of recurring, violent terrorist conspiracies. North Korea's dictator, Kim Jong Il, has a record of kidnapping and other erratic acts. A gloomy mind can readily devise plausible scenarios for nuclear terrorism in which any of these places might be a source of weapons or materials. As for potential targets, Al Qaeda's long-standing interest in New York, and its status as the largest seaport on the East Coast, has made the city, along with Washington, D.C., the focus of continual attention by the federal government since September 11th.

Building a fission weapon, or even detonating a stolen one, would be a challenging task for conspirators who didn't have a government's budget and infrastructure behind them, but people who are knowledgeable about nuclear weapons believe that it can be done. The most difficult aspect of such a project is acquiring a sufficient amount of highly enriched uranium or plutonium; the engineering work required to make a crude bomb could likely be mastered by a group of scientists—perhaps as few as a dozen. To prove the point, in a recent article in *Foreign Policy* Jeffrey Lewis and Peter Zimmerman described a hypothetical terrorist plan to build a basic fission weapon on a hundred-and-fifty-acre ranch in a remote area of the United States. Their imaginary budget was ten million dollars, their team would consist of nineteen people, and they found that they could buy many of the parts required over the Internet. Their scheme was inspired by the more ambitious plans of the Japanese terrorist cult Aum Shinrikyo, which explored uranium mining in Australia during the nineteen-nineties before mounting a sarin-gas attack on the Tokyo subway. Any of these cases, however, would require a successful plan to move contraband nuclear materials across international borders; as with the movement of terrorists themselves, borders offer a relatively uncomplicated chance of detection. This ancient principle of defense, more than faith in the technology of radiation sensing, may explain the support that the Bush Administration's detector program has attracted so far.

In the meantime, America's radiation-sensing system is, at least for now, detecting radioactive briefcase clasps, manhole covers, and chafing dishes. These are among the contaminated products caught by detectors recently at border crossings; in New York's seaports alone, there have been twenty such cases. On a recent morning when I visited a sensor outpost at the Port of Newark, four young Customs officers with pistols strapped to their belts huddled in a booth filled with computers as trucks rumbled through a line of radiation portals, which are shaped like metallic archways. The officers had joined Customs thinking that they would mainly battle narcotics traffickers; now they spend most of their time on terrorism issues, and they know more about isotopes than some high-school physics teachers do. Each time an alert in their booth sounds, a polite, calm computer voice speaks to them, as it did when I stopped by: "Gamma alert, lane six." This happens more than two hundred times per day at the Port of New York and New Jersey.

The officers checked the driver's papers, scanned the truck's sides with a handheld isotope identifier, consulted their computer screens, and within minutes announced their conclusion: denture cleaners, potassium-40. They spoke in the bored, slightly sardonic tone common among police officers, as if they were reviewing a burglar's jimmying techniques.

At some point, perhaps after the expenditure of a great amount of money, it will probably be cops like these, and not scientists or defense theorists, who decide where radiation detection should rank on the long and diverse list of counterterrorism techniques. The Department of Homeland Security recently announced an initiative to experiment with the installation of radiation detection at some bridges, tunnels, roadways, and waterways leading into Manhattan; later, the department hopes to surround other cities. The N.Y.P.D. fears that the sensors might prove to be too costly and would generate too many false alarms. Nearly three hundred thousand cars and trucks cross the George Washington Bridge in both directions on an average day; without an efficient way to process radiation alerts, a single convoy of banana trucks could jam up traffic for hours. "There are a lot of possible concerns that could surface with it," Raymond Kelly, the N.Y.P.D.'s commissioner, told me. Yet, he said, "we see this as something certainly worth trying." Kelly wants to deploy rings of sensors fifty miles or more from New York, so there would be a better chance of spotting an incoming device. In February, he held talks with his counterparts in Connecticut and New Jersey. Still, Kelly said, the entire project remains "very conceptual in nature." ♦

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