



USAF COUNTERPROLIFERATION CENTER
CPC OUTREACH JOURNAL
Maxwell AFB, Alabama

Issue No. 397, 28 December 2004

Articles & Other Documents:

[Fight On WMDs Boasts Global Backing](#)

[Enriched Uranium Sent Back To Secure Facility](#)

[As Nuclear Secrets Emerge, More Are Suspected](#)

[Little Room For Error In Catching A Missile](#)

[Long-Range Missile From Cold War Tested](#)

[Iran: Minister Says 'Nuclear Spies' Worked For U.S. And Israel](#)

[Quiet Demise Of The U.S.' Ultimate Weapon Is Bittersweet For Its Keepers](#)

Welcome to the CPC Outreach Journal. As part of USAF Counterproliferation Center's mission to counter weapons of mass destruction through education and research, we're providing our government and civilian community a source for timely counterproliferation information. This information includes articles, papers and other documents addressing issues pertinent to US military response options for dealing with nuclear, biological and chemical threats and attacks. It's our hope this information resource will help enhance your counterproliferation issue awareness.

Established in 1998, the USAF/CPC provides education and research to present and future leaders of the Air Force, as well as to members of other branches of the armed services and Department of Defense. Our purpose is to help those agencies better prepare to counter the threat from weapons of mass destruction. Please feel free to visit our web site at www.au.af.mil/au/awc/awcgate/awc-cps.htm for in-depth information and specific points of contact. Please direct any questions or comments on CPC Outreach Journal Jo Ann Eddy, CPC Outreach Editor, at (334) 953-7538 or DSN 493-7538. To subscribe, change e-mail address, or unsubscribe to this journal or to request inclusion on the mailing list for CPC publications, please contact Mrs. Eddy.

The following articles, papers or documents do not necessarily reflect official endorsement of the United States Air Force, Department of Defense, or other US government agencies. Reproduction for private use or commercial gain is subject to original copyright restrictions. All rights are reserved

Washington Times
December 23, 2004
Pg. 1

Fight On WMDs Boasts Global Backing

60 nations support security effort

By Bill Gertz, The Washington Times

The war in Iraq has set the United States at odds with some allies, but the international community is strongly supporting a U.S.-led initiative to stop the spread of weapons of mass destruction.

More than 60 nations — including Russia and France, two key opponents of the Bush administration's policy toward Iraq — are supporting the 19-month-old Proliferation Security Initiative (PSI). The global effort to halt arms proliferation has also gained favor from the United Nations.

So far, details about the small number of boarding operations of ships and seizures of illicit cargo under PSI remain secret, according to Bush administration officials.

The one action made public was the Oct. 4, 2003, seizure of the German-flagged ship *BBC China* that was on its way to Libya with equipment for Moammar Gadhafi's covert nuclear-arms program.

A U.S. warship forced the ship to divert to Italy. On board, investigators found containers of uranium-enrichment equipment. That discovery led to the unraveling of the covert nuclear supplier network headed by Pakistani Abdul Qadeer Khan that stretched from Germany to South Africa to Malaysia.

The network had supplied nuclear-weapons materials to Libya, Iran, North Korea and others.

PSI, launched by President Bush in May 2003, was an outgrowth of the administration's effort to prevent weapons of mass destruction from reaching terrorists.

Its core participants include the governments of the United States, Australia, Canada, Denmark, France, Germany, Greece, Italy, Japan, the Netherlands, New Zealand, Norway, Poland, Portugal, Russia, Singapore, Spain, Thailand and Britain.

But more than 40 other states have signed on to its principles and have chosen to keep their participation secret or limited.

The initiative is hoped to be the first step in creating a new global system to control the spread of nuclear, chemical and biological weapons and missile systems.

One key element of PSI is the landmark agreement reached with Liberia and Panama that allows PSI operations — carried out by navies or coast guards — to conduct seizures and boardings of suspect merchant ships sailing under the flags of those nations.

Vessels flagged from Liberia and Panama account for about 50 percent of all shipping around the world.

"PSI is an activity, not an organization," said John Bolton, the undersecretary of state for international security and one of the key officials involved in the initiative.

"Our goal is based on an equally simple tenet — that the impact of states working together in a deliberately cooperative manner would be greater than states acting alone in an ad hoc fashion," Mr. Bolton said during a speech in October following a PSI ship-boarding simulation near Tokyo harbor.

Another major official involved in starting PSI is Robert Joseph, until recently the White House National Security Council staff official in charge of dealing with arms proliferation.

Mr. Joseph helped author a classified presidential directive on the issue that is the basis for PSI.

Defense Secretary Donald H. Rumsfeld also has been a key administration backer of PSI. Mr. Rumsfeld views international cooperation as the key to curbing arms proliferation.

Asked about PSI, Mr. Rumsfeld said: "We've just got to put enormous energy behind it. We have to do it soon and aggressively and persuasively, and help the world understand that the world's safety depends on our having a degree of success, more success than we're currently achieving with the [nonproliferation] regimes that exist."

Mr. Rumsfeld said in a recent interview that unless measures are taken to halt proliferation, as many as five additional nuclear-weapons powers could emerge. "There could be several more countries with chemical and biological programs, and there could be additional countries with the ability to deliver those capabilities long distances," he said.

The growth of those armed states is made more dangerous by the fact that many of the emerging arms states are listed by the State Department as sponsors of international terrorism. "The inevitable effect of that is to make the world a more dangerous place," Mr. Rumsfeld said.

A State Department official said there is a broad consensus among PSI states to stop arms shipments. However, how to identify the countries "of proliferation concern" is more difficult.

So far, PSI has focused on stopping shipments at sea and on land. However, authorities also are seeking ways to stop aircraft carrying deadly arms or equipment destined for rogue states or state sponsors of terrorism.

In the past year and half, Mr. Bolton, a specialist in international law, has shuttled through world capitals in Asia and Europe, in an effort to convince governments that stopping illicit shipments is an urgent need.

The work has paid off. The United Nations Report of the High-Level Panel on Threats, Challenges and Change endorsed PSI. The report said that, based on the BBC China interdiction, "We believe that all states should be encouraged to join this voluntary initiative."

A U.S.-sponsored United Nations Security Council Resolution passed in April also has endorsed the idea of a halt in the spread of weapons of mass destruction.

The one state that is holding out as far as PSI is China, which the CIA has identified as a major supplier of equipment and material related to illicit arms. China remains "reserved" toward the initiative, a State Department official said.

Several Bush administration officials said Mr. Bolton deserved to be rewarded for his role in developing PSI.

Mr. Bolton is considered a candidate for several high-level posts in the second Bush administration, including deputy secretary of state and deputy White House national security adviser.

<http://www.washtimes.com/national/20041223-122156-7658r.htm>

Long-Range Missile From Cold War Tested

MOSCOW — Russia yesterday test-fired a Cold War-era long-range missile, originally designed to be capable of hitting the United States, local media reported.

The Voyevoda intercontinental ballistic missile — code-named SS-18 Satan in the West — hurtled more than 3,700 miles to its target in Russia's Far East from a launch site in the Ural mountains.

It was the first time the missile, capable of carrying 10 nuclear warheads, has been launched on Russian soil since 1991, the year the Soviet Union collapsed. Previous launches had been from the Baikonour cosmodrome in Kazakhstan, which Russia rents from the former Soviet republic.

<http://www.washtimes.com/world/20041223-120749-5595r.htm>

Los Angeles Times

December 23, 2004

Enriched Uranium Sent Back To Secure Facility

By Times Wire Reports

About 13 pounds of highly enriched uranium was returned to Russia from a research facility in the Czech Republic, the Energy Department announced. The transfer was part of an international program to better secure material that terrorists could use in a weapon.

The uranium was transported by plane from an airport near Prague, the Czech capital, to a secure facility in Dimitrovgrad, Russia, where it will be blended down so it is no longer suitable for weapons use. Russia provided the uranium for use in a research reactor in Rez, just north of Prague.

<http://www.latimes.com/news/nationworld/world/la-fg-briefs23.1dec23,1,7942695.story>

New York Times

December 23, 2004

Iran: Minister Says 'Nuclear Spies' Worked For U.S. And Israel

The authorities have arrested more than 10 men over the past nine months on charges of spying on the country's nuclear activities for the United States and Israel, Intelligence Minister Ali Yunesi told IRNA news agency. He said that the men were arrested in Tehran and the southern city of Hormouzan and that three worked for Iran's atomic energy agency. Their names will not be made public until their trial. Mr. Yunesi said that an opposition group based in Iraq, the People's Mujahedeen, had played a central role in the espionage. In 2002, the organization's military wing, the National Council of Resistance, revealed the existence of a secret nuclear facility in Natanz and a heavy-water complex near Arak. At the time, the United Nations nuclear monitoring agency was unaware of them.

Nazila Fathi (NYT)

<http://www.nytimes.com/2004/12/23/international/23briefs.html?oref=login>

New York Times

December 26, 2004

Pg. 1

As Nuclear Secrets Emerge, More Are Suspected

By William J. Broad and David E. Sanger

When experts from the United States and the International Atomic Energy Agency came upon blueprints for a 10-kiloton atomic bomb in the files of the Libyan weapons program earlier this year, they found themselves caught between gravity and pettiness.

The discovery gave the experts a new appreciation of the audacity of the rogue nuclear network led by A. Q. Khan, a chief architect of Pakistan's bomb. Intelligence officials had watched Dr. Khan for years and suspected that he was trafficking in machinery for enriching uranium to make fuel for warheads. But the detailed design represented a new level of danger, particularly since the Libyans said he had thrown it in as a deal-sweetener when he sold them \$100 million in nuclear gear.

"This was the first time we had ever seen a loose copy of a bomb design that clearly worked," said one American expert, "and the question was: Who else had it? The Iranians? The Syrians? Al Qaeda?" But that threat was quickly overshadowed by smaller questions.

The experts from the United States and the I.A.E.A., the United Nations nuclear watchdog - in a reverberation of their differences over Iraq's unconventional weapons - began quarreling over control of the blueprints. The friction was palpable at Libya's Ministry of Scientific Research, said one participant, when the Americans accused international inspectors of having examined the design before they arrived. After hours of tense negotiation, agreement was reached to keep it in a vault at the Energy Department in Washington, but under I.A.E.A. seal.

It was a sign of things to come.

Nearly a year after Dr. Khan's arrest, secrets of his nuclear black market continue to uncoil, revealing a vast global enterprise. But the inquiry has been hampered by discord between the Bush administration and the nuclear watchdog, and by Washington's concern that if it pushes too hard for access to Dr. Khan, a national hero in Pakistan, it could destabilize an ally. As a result, much of the urgency has been sapped from the investigation, helping keep hidden the full dimensions of the activities of Dr. Khan and his associates.

There is no shortage of tantalizing leads. American intelligence officials and the I.A.E.A., working separately, are still untangling Dr. Khan's travels in the years before his arrest. Investigators said he visited 18 countries, including Syria, Saudi Arabia and Egypt, on what they believed were business trips, either to buy materials like uranium ore or sell atomic goods.

In Dubai, they have scoured one of the network's front companies, finding traces of radioactive material as well as phone records showing contact with Saudi Arabia. Having tracked the network operations to Malaysia, Europe and the Middle East, investigators recently uncovered an outpost in South Africa, where they seized 11 crates of equipment for enriching uranium.

The breadth of the operation was particularly surprising to some American intelligence officials because they had had Dr. Khan under surveillance for nearly three decades, since he began assembling components for Pakistan's bomb, but apparently missed crucial transactions with countries like Iran and North Korea.

In fact, officials were so confident they had accurately taken his measure, that twice - once in the late 1970's and again in the 1980's - the Central Intelligence Agency persuaded Dutch intelligence agents not to arrest Dr. Khan because they wanted to follow his trail, according to a senior European diplomat and a former Congressional official who had access to intelligence information. The C.I.A. declined to comment.

"We knew a lot," said a nuclear intelligence official, "but we didn't realize the size of his universe."

President Bush boasts that the Khan network has been dismantled. But there is evidence that parts of it live on, as do investigations in Washington and Vienna, where the I.A.E.A. is based.

Cooperation between the United Nations atomic agency and the United States has trickled to a near halt, particularly as the Bush administration tries to unseat the I.A.E.A. director general, Mohamed ElBaradei, who did not support the White House's prewar intelligence assessments on Iraq.

The chill from the White House has blown through Vienna. "I can't remember the last time we saw anything of a classified nature from Washington," one of the agency's senior officials said. Experts see it as a missed opportunity because the two sides have complementary strengths - the United States with spy satellites and covert capabilities to intercept or disable nuclear equipment, and the I.A.E.A. with inspectors who have access to some of the world's most secretive atomic facilities that the United States cannot legally enter.

In the 11 months since Dr. Khan's partial confession, Pakistan has denied American investigators access to him.

They have passed questions through the Pakistanis, but report that there is virtually no new information on critical questions like who else obtained the bomb design. Nor have American investigators been given access to Dr. Khan's chief operating officer, Buhari Sayed Abu Tahir, who is in a Malaysian jail.

This disjunction has helped to keep many questions about the network unanswered, including whether the Pakistani military was involved in the black market and what other countries, or nonstate groups, beyond Libya, Iran and North Korea, received what one Bush administration official called Dr. Khan's "nuclear starter kit" - everything from centrifuge designs to raw uranium fuel to the blueprints for the bomb.

Privately, investigators say that with so many mysteries unsolved, they have little confidence that the illicit atomic marketplace has actually been shut down. "It may be more like Al Qaeda," said one I.A.E.A. official, "where you cut off the leadership but new elements emerge."

A Potential Danger

A. Q. Khan may have been unknown to most Americans when he was revealed about a year ago as the mastermind of the largest illicit nuclear proliferation network in history. But for three decades Dr. Khan, a metallurgist, has been well known to British and American intelligence officials. Even so, the United States and its allies passed up opportunities to stop him - and apparently failed to detect that he had begun selling nuclear technology to Iran in the

late 1980's. It was the opening transaction for an enterprise that eventually spread to North Korea, Libya and beyond.

Dr. Khan studied in Pakistan and Europe. After he secured a job in the Netherlands in the early 1970's at a plant making centrifuges - the devices that purify uranium - Dutch intelligence officials began watching him. By late 1975, they grew so wary, after he was observed at a nuclear trade show in Switzerland asking suspicious questions, that they moved him to a different area of the company to keep him away from uranium enrichment work. "There was an awareness," said Frank Slijper of the Dutch Campaign against Arms Trade, who recently wrote a report on Dr. Khan's early days, "that he was a potential danger."

Dr. Khan suddenly left the country that December, called home by his government for its atomic project. Years later, investigators discovered that he had taken blueprints for the centrifuges with him. In Pakistan, Dr. Khan was working to develop a bomb to counter India's, and Washington was intent on stopping the project.

It later proved to be the first of several occasions when the United States failed to fully understand what Dr. Khan was up to. Joseph Nye, a Harvard professor who has served in several administrations, said American intelligence agencies thought Pakistan would try to make its bomb by producing plutonium - an alternative bomb fuel. Mr. Nye was sent to France to halt the shipment of technology that would have enabled Pakistan to complete a reprocessing plant for the plutonium fuel. "We returned to Washington to celebrate our victory, only to discover that Khan had already stolen the technology for another path to the bomb," Mr. Nye recalled.

To gather more atomic gear and skill, Dr. Khan returned to the Netherlands repeatedly. But the United States wanted to watch him, and a European diplomat with wide knowledge of nuclear intelligence cited the two occasions when the C.I.A. persuaded the Dutch authorities not to arrest him. Intelligence officials apparently felt Dr. Khan was more valuable as an unwitting guide to the nuclear underworld.

"The Dutch wanted to arrest him," the diplomat said. "But they were told by the American C.I.A., 'Leave him so we can follow his trail.'"

A Chinese Connection

Dr. Khan quickly led the agents to Beijing. It was there in the early 1980's that Dr. Khan pulled off a coup: obtaining the blueprints for a weapon that China had detonated in its fourth nuclear test, in 1966. The design was notable because it was compact and the first one China had developed that could easily fit atop a missile.

American intelligence agencies only learned the full details of the transactions earlier this year when the Libyans handed over two large plastic bags with the names of an Islamabad tailor on one side and a dry-cleaner on other - one of several clues that it had come from the Khan Laboratories. The design inside included drawings of more than 100 parts, all fitting in a sphere about 34 inches in diameter, just the right size for a rocket.

Equally remarkable were the handwritten notations in the margins. "They made reference to Chinese ministers, presumably involved in the deal," one official who reviewed it disclosed. And there was also a reference to "Munir," apparently Munir Khan, Dr. Khan's rival who ran the Pakistan Atomic Energy Commission and was in a contest with Dr. Khan to put together a Pakistani weapon that would match India's.

In that race, size was critical, because only a small weapon could be put atop Pakistani missiles. One note in the margin of the design, the official said, was that "Munir's bomb would be bigger."

Intelligence experts believe that Dr. Khan traded his centrifuge technology to the Chinese for their bomb design. A certain familiarity developed between Dr. Khan and those watching him.

"I remember I was once in Beijing on a nonproliferation mission," said Robert J. Einhorn, a longtime proliferation official in the State Department, "and we knew that Khan was in Beijing, too, and where he was. I had this fantasy of going over to his hotel, calling up to his room, and inviting him down for a cup of coffee."

Of course, he never did. But if he had, Dr. Khan might not have been surprised.

Simon Henderson, a London-based author who has written about Dr. Khan for more than two decades, said the Pakistani scientist long suspected he was under close surveillance. "Khan once told me, indignantly, 'The British try to recruit members of my team as spies,'" Mr. Henderson recalled. "As far as I'm aware, he was penetrated for a long, long time."

Still, for all the surveillance, American officials always seemed a step or two behind. In the 1990's, noted Mr. Einhorn, the assumption was that Iran was getting most of its help from Russia, which was providing the country with reactors and laser-isotope technology. Virtually no attention was paid to its contacts with Dr. Khan.

"It was a classic case of being focused in the wrong place," Mr. Einhorn said. "And if Iran gets the bomb in the next few years, it won't be because of the Russians. It will be because of the help they got from A. Q. Khan."

Triumph and Mystery

As soon as Mr. Bush came to office, his director of central intelligence, George J. Tenet, began tutoring him on the dangers of Dr. Khan and disclosing how deeply the agency believed it had penetrated his life and network. "We were inside his residence, inside his facilities, inside his rooms," Mr. Tenet said in a recent speech. "We were everywhere these people were."

But acting on the Khan problem meant navigating the sensitivities of a fragile ally important in the effort against terrorism. That has impeded the inquiry ever since.

Washington had little leverage to force Pakistan's president, Gen. Pervez Musharraf, to clamp down on a national hero, especially since Dr. Khan may have had evidence implicating the Pakistani government in some of the transactions. And in interviews, officials said they feared that moving on Dr. Khan too early would hurt their chances to roll up the network.

Stephen J. Hadley, the deputy national security adviser, went to Pakistan soon after the Sept. 11 attacks and raised concerns about Dr. Khan, some of whose scientists were said to have met with Osama bin Laden, Al Qaeda's leader. But Mr. Hadley did not ask General Musharraf to take action, according to a senior administration official. He returned to Washington complaining that it was unclear whether the Khan Laboratories were operating with the complicity of the Pakistani military, or were controlled by freelancers, motivated by visions of profit or of spreading the bomb to Islamic nations. The Pakistanis insisted they had no evidence of any proliferation at all, a claim American officials said they found laughable.

As evidence grew in 2003, Mr. Bush sent Mr. Tenet to New York to meet with General Musharraf. "We were afraid Khan's operation was entering a new, more dangerous phase," said one top official. Still there was little action. But in late October 2003, the United States and its allies seized the BBC China, a freighter bearing centrifuge parts made in Malaysia, along with other products of Dr. Khan's network, all bound for Libya. Confronted with the evidence, Libya finally agreed to surrender all of its nuclear program. Within weeks, tons of equipment was being dismantled and flown to the Energy Department's nuclear weapons lab at Oak Ridge, Tenn.

Pressures mounted on General Musharraf. "I said to him, 'We know so much about this that we're going to go public with it,' " Secretary of State Colin L. Powell told journalists last week. " 'And you need to deal with this before you have to deal with it publicly.' "

On television, Dr. Khan was forced to confess but he gave no specifics, and General Musharraf pardoned the scientist. American officials pressed to interview him and his chief lieutenant, Mr. Tahir, a Sri Lankan businessman living in Dubai and Malaysia, who was eventually arrested by Malaysian authorities.

But the Pakistanis balked, insisting that they would pass questions to Dr. Khan and report back. Little information has been conveyed.

"Some questions simply were never answered," said one senior intelligence official. "In other cases, you don't know if you were getting Khan's answer, or the answer the government wanted you to hear."

Dr. Khan's silence has extended to the question of what countries, other than Libya, received the bomb design. Intelligence experts say they have no evidence any other nation received the design, although they suspect Iran and perhaps North Korea. But that search has been hampered by lack of hard intelligence.

"We strongly believe Iran did," said one American official. "But we need the proof."

Dr. Khan has also never discussed his ties with North Korea, a critical issue because the United States has alleged - but cannot prove - that North Korea has two nuclear arms programs, one using Khan technology.

"It is an unbelievable story, how this administration has given Pakistan a pass on the single worst case of proliferation in the past half century," said Jack Pritchard, who worked for President Clinton and served as the State Department's special envoy to North Korea until he quit last year, partly in protest over Mr. Bush's Korea policy.

"We've given them a pass because of Musharraf's agreement to fight terrorism, and now there is some suggestion that the hunt for Osama is waning. And what have we learned from Khan? Nothing."

Some Missing Pieces

In March, American investigators invited reporters to the giant nuclear complex in Oak Ridge to display the equipment disgorged by the Libyans. They surrounded the site with guards bearing automatic weapons, and Energy Secretary Spencer Abraham joined the officials in showing off some of the 4,000 centrifuges.

"We've had a huge success," he said. But it turned out that the centrifuges were missing their rotors - the high-speed internal device that makes them work. To this day, it is not clear where those parts were coming from. While some officials believe the Libyans were going to make their own, others fear the equipment had been shipped from an unknown location - and that the network, while headless, is still alive.

John R. Bolton, the under secretary of state for arms control and international security, echoed those suspicions, saying the network still had a number of undisclosed customers. "There's more out there than we can discuss publicly," he said in April.

Federal and private experts said the suspected list of customers included Syria, Egypt, Saudi Arabia, Sudan, Malaysia, Indonesia, Algeria, Kuwait, Myanmar and Abu Dhabi.

Given the urgency of the Libyan and Khan disclosures, many private and governmental experts expected that the Bush administration and the I.A.E.A. would work together. But European diplomats said the administration never turned over valuable information to back up its wider suspicions about other countries. "It doesn't like to share," a

senior European diplomat involved in nuclear intelligence said of the United States. "That makes life more difficult. So we're on the learning curve."

Federal officials said they were reluctant to give the I.A.E.A. classified information because the agency is too prone to leaks. The agency has 137 member states, and American officials believe some of them may be using the agency to hunt for nuclear secrets. One senior administration official put it this way: "The cops and the crooks all serve on the agency's board together."

The result is that two separate, disjointed searches are on for other nuclear rogue states - one by Washington, the other by the I.A.E.A. And there is scant communication between the feuding bureaucracies.

That lack of communication with the United Nations agency extends to the Nuclear Suppliers Group, a loose organization of countries that produce nuclear equipment. It can stop the export of restricted atomic technology to a suspect customer, but it does not report its actions to the I.A.E.A. Moreover, there is no communication between the I.A.E.A. and the Bush administration's Proliferation Security Initiative, which seeks to intercept illicit nuclear trade at sea or in the air.

"It's a legitimate question whether we need a very different kind of super-agency that can deal with the new world of A. Q. Khans," said a senior administration official. "Because we sure don't have the system we need now."

Dr. ElBaradei, the head of the United Nations agency, says he is plunging ahead, pursuing his own investigation even as the Bush administration attempts to have him replaced when his term expires late next year. In an interview in Vienna, he defended his record, citing the information he has wrung out of Iran, and his agency's discovery of tendrils of Dr. Khan's network in more than 30 countries around the globe.

"We're getting an idea of how it works," he said of the Khan network. "And we're still looking" for other suppliers and customers.

One method is to investigate the countries Dr. Khan visited before his arrest. Nuclear experts disclosed that the countries were Afghanistan, Egypt, Iran, Ivory Coast, Kazakhstan, Kenya, Mali, Mauritania, Morocco, Niger, Nigeria, North Korea, Saudi Arabia, Senegal, Sudan, Syria, Tunisia and the United Arab Emirates. Many of them are Islamic, and several of the African countries are rich in uranium ore.

In one of its biggest operations, the agency is hunting for clues in a half dozen of the network's buildings and warehouses in Dubai, which for years were used for assembling and repacking centrifuges.

Both in Washington and in Vienna, the most delicate investigations involve important American allies - including Egypt and Saudi Arabia. So far, said European intelligence officials familiar with the agency's inner workings, no hard evidence of clandestine nuclear arms programs has surfaced.

Suspicious signs have emerged, however. For instance, experts disclosed that SMB Computers, Mr. Tahir's front company in Dubai for the Khan network, made telephone calls to Saudi Arabia. But the company also engaged in legitimate computer sales, giving it plausible cover. Experts also disclosed that Saudi scientists traveled to Pakistan for some of Dr. Khan's scientific conferences. But the meetings were not secret, or illegal.

There is also worry in both Washington and Vienna about Egypt, which has two research reactors near Cairo and a long history of internal debate about whether to pursue nuclear arms. But European intelligence officials said I.A.E.A. inspectors who recently went there found no signs of clandestine nuclear arms and some evidence of shoddy workmanship that bespeaks low atomic expectations. As for Syria, the Bush administration had repeatedly charged that it has secretly tried to acquire nuclear arms. But the I.A.E.A. has so far found no signs of a relationship with Dr. Khan or a clandestine nuclear weapons program.

Worried about what is still unknown, the I.A.E.A. is quietly setting up what it calls the Covert Nuclear Trade Analysis Unit, agency officials disclosed. It has about a half dozen specialists looking for evidence of deals by the Khan network or its imitators.

"I would not be surprised to discover that some countries pocketed some centrifuges," Dr. ElBaradei said. "They may have considered it a chance of a lifetime to get some equipment and thought, 'Well, maybe it will be good for a rainy day.'"

William J. Broad reported from New York for this article, and David E. Sanger from Washington.

<http://www.nytimes.com/2004/12/26/international/asia/26nuke.html>

Los Angeles Times
December 26, 2004

Quiet Demise Of The U.S.' Ultimate Weapon Is Bittersweet For Its Keepers

The crews trained to maintain and launch the MX missile reflect on its role as a deterrent.

By David Kelly, Times Staff Writer

CHUGWATER, Wyo. — They wait silently beneath these rolling ranchlands, invisible to passing cars, impervious to cattle lumbering overhead but ready to fly in an instant.

A small metal rod protruding from the ground often is the only hint of what's below. Come too close, and a silent alarm triggers an instant response from heavily armed guards.

At stake is the security of America's — and perhaps the world's — ultimate weapon of mass destruction: the MX missile. The 71-foot-high missile, also called the Peacekeeper, can travel halfway around the world before striking within 400 feet of its target.

Since 1986, the weapons have been the quintessentially quiet neighbor in these parts, keeping to themselves but capable of enormous destruction if provoked. Now the hulking rockets that confounded the Soviet Union, prompted street protests in Europe, inspired Hollywood thrillers and terrified millions are fading away.

For the last two years, MX numbers have shrunk from 50 to 13. By next December, none will be left. And their demise has been bittersweet for the crews trained to care for and, if necessary, launch them.

"There is a nostalgia in seeing something so powerful go away," said Capt. Carrie Owen, a missile operator at the Romeo One Launch Control Center located 60 feet below the wind-swept plains of eastern Wyoming. "We are all so proud to be a part of it."

The facility closed down last week. Its codes were removed, its targeting system unplugged and the top secret "cookies" — mysterious devices that verify a president's order to fire an intercontinental ballistic missile — spirited away by young men in green jumpsuits.

The last three launch centers will be shut next year, and its crews given new jobs.

The missiles were deployed by President Reagan, who believed that only a more modern, more powerful weapons system could wring arms concessions from the Soviets.

"It was a paradox," said Col. Evan Hoapili, commander of the 90th Space Wing at F.E. Warren Air Force Base in Cheyenne, which has responsibility for the missiles. "Reagan said, 'If I field a more modern weapons system, I will have a world with fewer nuclear weapons.' It sounded crazy, but he was right."

In 2002, President George H.W. Bush and Russian President Vladimir V. Putin agreed to reduce their nuclear warhead stockpiles to between 1,200 and 2,200 each by 2012. The MX, with 10 warheads apiece, was chosen for shutdown.

"The Peacekeeper is the largest, most powerful and most accurate weapon system ever devised," said Lt. Col. Dave Bliesner, who oversees day-to-day operations of the entire MX missile network. "It causes us a little bit of sadness to see it dismantled."

Bliesner was driving out from Cheyenne to visit Romeo One on its last day of operation. He went through the little town of Chugwater, past the old soda shop, before turning down a country road and pulling up to a few nondescript buildings surrounded by a chain-link fence.

Uniformed guards carrying M-4 assault rifles were the first indication that this wasn't a local farmhouse. After lengthy security checks, Bliesner and a visitor were allowed into an enormous elevator that slowly sank below ground.

Two huge blast doors, weighing 8 tons each, were opened. A short walkway led into the launch center or capsule, a claustrophobic room about 20 feet long and 6 feet across. Banks of aging computers lined the walls. There was a keyboard used to retarget missiles and a safe holding top-secret decoding devices.

A red chair with a seat belt sat on a rail, designed to allow a person to move the length of the room securely during an attack. A simple bed and a toilet took up the rest of the space.

Capt. Leland Taylor monitored a panel of lights and buttons. Just then an alarm went off, indicating something had come too close to a nearby missile site. Security was dispatched.

"A lot of times a rabbit or even the wind sets it off," Taylor said.

Missile operators train endlessly. They do checklist after checklist and must take three tests a month to ensure their technical and mental readiness. Anyone judged less than 100% capable is removed from duty.

"This is a zero-mistake job," Bliesner said. "We take the power of these weapons very seriously. If there was any Dr. Strangelove-like person inside saying 'Oh, God, let it happen today,' I would never certify them. No one wants to launch these missiles, because we all know the repercussions."

That's why it isn't easy to launch a missile.

"First of all, there is no big red button," said Owen, who works alongside Taylor.

A missile can be fired only when specific computer codes from the president are fed to the capsule. The codes must be verified and a second launch center must agree the order is legitimate. Then the missile is enabled.

"It's like a gun that must be cocked," Owen said.

After that, the duty officers retrieve two keys from a locked safe. One keyhole is at the front of the capsule, the other near the back. The keys must be turned simultaneously to launch.

There have been some tense moments over the years.

"Sept. 11 was the first time in my career when I thought we would have to do our mission," Owen said. "We didn't know what was going on."

The capsule, staffed by two officers 24 hours a day, is designed to survive a near hit from an incoming missile, but not a direct hit.

When the MX disappears, the U.S. will have 500 ICBMs left — all of them Minutemen III scattered across Montana, Wyoming, Colorado, North Dakota and Nebraska.

But even the Minuteman is being downsized, going from three warheads each to one.

"The U.S. Air Force is doing an analysis now to see what system will replace the Minuteman in 2020," said Maj. Gen. Frank Klotz, commander of the nation's ICBM force. "It may not even be a missile."

Klotz said the weapons served a valuable function in deterring nations seeking their own nuclear forces from attacking the U.S.

"When I came in we had nine ICBM bases, and now we have three. We had 1,054 deployed ICBMs and that is down to 513," he said. "The decision for our national political leadership is how low we can go."

For some, the missiles transcend politics and treaties.

Gary Smith, a civilian field supervisor for the MX, has worked with the weapon since its inception.

"All good things must come to an end," he said. "I have a fondness for that system. It's like the child you raise through elementary school, high school and college and now it's gone. But the American public can be proud that it did its job by never having to be deployed."

<http://www.latimes.com/news/nationworld/nation/la-na-missiles26dec26,1,5133984.story>

Los Angeles Times

December 25, 2004

Pg. 1

Little Room For Error In Catching A Missile

By Charles Piller, Times Staff Writer

The first line of defense in America's next antimissile system fails or succeeds in a window of 90 seconds.

That's all the time there is, designers estimate, for a satellite to detect the flash of an enemy launch, determine that it is real and send off a counter-missile from the ground.

It all happens too fast to include a human in the loop.

"Time is of the essence," said Craig van Schilfhaarde, the Northrop Grumman Corp. engineer in charge of the project.

Known as "boost-phase" interception, it is designed to be the first "layer" of defense, firing rockets at enemy missiles just after launch, when they are most vulnerable.

The military has already deployed parts of the two other layers in the missile defense system — one targeting missiles as they cruise through space in midflight and the other aimed at descending warheads when they are just above their targets.

The three layers are the cornerstone of President Bush's plan to defend the country against rogue nations, such as North Korea and Iran, that are gradually developing the ability to produce weapons with global reach.

But the system has already faced serious problems.

The midcourse missile failed a test Dec. 15 when it shut down before leaving its silo at the Ronald Reagan Test Site at Kwajalein Atoll in the central Pacific Ocean. It was the second failure in a major test in two years.

On Dec. 17, the Pentagon announced it was dropping plans to activate the existing pieces of the missile defense system this year because it had not completed full "shakedown" testing.

The boost phase reaches into an even more complex realm of design, in part because of the speed with which it must identify and destroy an enemy missile.

The payoff could be big. Terry Little, executive director of the government's Missile Defense Agency, said the boost-phase interceptors could destroy 80% to 90% of enemy ICBMs, leaving the other layers to take care of the rest.

But a recent Congressional Budget Office technical report suggested that the boost-phase system, scheduled for deployment in 2011, would press the far edge of what was physically possible in an antimissile system.

Philip Coyle, who headed the Pentagon's testing office during the Clinton administration, said the design of the boost-phase system was already buckling under its own complexity.

"The [congressional] analysis confirmed that boost-phase missile defense isn't practicable," Coyle said. "You can't fool mother nature."

Today's missile defense programs were inspired by President Reagan's promise to end "nuclear blackmail" with his Strategic Defense Initiative, a plan to shield the nation against an all-out nuclear attack using satellite-fired interceptors.

Dubbed "Star Wars" by opponents in Congress, Reagan's program fell victim to technical dead-ends, cost overruns and concerns that it would violate the 1972 Anti-Ballistic Missile Treaty, which banned nationwide missile defense systems.

Missile defense languished until 2002, when Bush withdrew from the treaty, which he considered a Cold War-era anachronism.

Instead of trying to defend against all-out nuclear attack by a major power, today's plan targets the less-advanced arsenals of emerging nuclear states.

The entire system is budgeted at about \$50 billion over the next five years and is likely to cost several times that amount to build, deploy and maintain.

In July, the Missile Defense Agency began deploying the midcourse interceptors in Alaska. A second battery is scheduled for deployment next year at Vandenberg Air Force Base in Santa Barbara County.

Mobile Patriot antimissile systems, a key part of the descent layer (also known as the terminal layer), have been deployed.

A year ago, Northrop won a \$4.5-billion contract to develop the boost-phase interceptors. Congress has approved \$348 million for the current fiscal year.

Boost defense "would never be able to handle every situation that anybody could conceive of," said Little of the Missile Defense Agency. "But we could handle enough that we could look at ourselves as an 80% or 90% solution."

The allure of striking enemy missiles in the boost phase is that they are easily identified by their plumes just after launch and, because they are ascending, cannot use their full bag of tricks to dodge and deceive.

So far, the only part of the boost-phase system that has been built is a single camouflaged launcher with dual launch tubes. The 30-foot-long trailer is parked beside a pile of scrap metal outside a Northrop warehouse near Baltimore.

Little said that the system would not need the technical leaps that Star Wars required.

"The technology is in hand," he said. "It does not hinge on any kind of a technology breakthrough."

The trick is getting the pieces to work together — all in the space of a few minutes at most.

To destroy a missile in the boost-phase requires an unprecedented coordination of space-based sensors, signal-analysis computers, interceptor agility and enough sheer thrust to lift a 10-ton object to about 20 times the speed of sound in less than a minute.

Each interceptor consists of a two-stage booster, followed by a liquid-fuel rocket that steers the kill vehicle on the last leg of its journey to the target. It would travel at about 13,400 mph.

After infrared sensors on satellites detect the enemy launch, interceptors would be directed to the target by terrestrial command stations that constantly update the target's flight path. Onboard sensors would take over at close range.

The interceptor's goal is to strike the enemy missile before the warhead separates from its rocket, usually at an altitude below 300 miles.

The interceptors gain speed and agility because they don't have to haul a heavy explosive warhead. Instead, they are designed to destroy their target with the force of collision.

This "kinetic" attack — described as hitting a bullet with a bullet — demands uncanny accuracy.

"What is the precision required? I would characterize it as within less than a meter" over hundreds of miles traveled, he said.

To catch an ICBM streaking across the sky, interceptors would be placed about 600 miles back from the target's launch site on land or sea.

The military also is developing an airborne laser to shoot down ICBMs as they ascend.

"These guys are very, very immature in their development," said Northrop's Van Schilfgaarde, referring to the missile programs of North Korea and Iran. Even if their technology improves, he said, "we have tremendous flexibility."

Even before it has gotten off the drawing boards, the boost-phase system has drawn criticism from a variety of scientists and engineers, who see it as technological hubris.

It's a needlessly costly and complicated system for a threat that could, for example, be more easily neutralized with preemptive strikes, said Theodore A. Postol, a missile expert at MIT.

The agency's boost-phase plan faces a conundrum that has plagued missile defense since World War II: Technology advances tend to favor offense over defense.

The Missile Defense Agency said that 27 nations, including several with unstable governments, have ballistic missiles. No rogue nation can deliver a nuclear or chemical warhead to the United States, but each is striving to improve its technology. And proliferation is accelerating.

The technical challenges of boost-phase defense are best captured in the problem of Yazd, an ancient city of about 500,000 in the geographic center of Iran.

To down a missile launched from Yazd and other potential Iranian launch sites, up to seven interceptor batteries would be needed in such areas as Iraq, Turkmenistan and the Gulf of Oman — areas that might be hard to reach or secure.

"If you can't get in close, you don't have a boost-phase capability," Van Schilfgaarde acknowledged.

The Congressional Budget Office report said that defending against missiles from large countries might require interceptors that travel up to 22,000 mph — beyond today's technology.

One of the most complex parts of the boost-phase interception is its sensing and targeting system. Launch commands would have to be automated because the launch window would close long before a human being could evaluate sensor data, particularly if several ICBMs were fired at once.

Yet spy satellites that would direct the action are far from foolproof.

"Sensors are subject to huge [signal] noise problems, so you have to be careful not to launch too soon," said David Mosher, an antimissile expert with the Rand Corp. in Arlington, Va.

"Even bonfires are a problem," said Coyle, the Clinton Pentagon official. "If you make them hot enough with chemicals, to our satellites at first glance they look like a rocket going off."

Bigger doubts involve interceptor accuracy.

Midcourse missiles, which use a similar kinetic attack, have a spotty record. They have hit targets in five of nine tests; succeeding only under what Coyle regards as rigged conditions. During the recent test in Alaska, the rocket failed to leave its silo.

Even against slower-moving short- and medium-range rockets, antimissile systems have been troubled. Patriot interceptors failed to hit nearly all of their targets during the 1991 Persian Gulf War, according to a congressional investigation and an analysis by outside scientists. In the Iraq war, Patriots mistakenly downed two coalition aircraft. For boost phase, a glancing blow could prove worse than a simple miss. If the interceptor hits the missile body — an error of a couple of feet over hundreds of miles traveled to the target — an Iranian weapon aimed at San Francisco, for example, could end up in Russia.

The Missile Defense Agency regards the risk as unfortunate but acceptable.

"Everything else being equal, a warhead not hitting its intended target is a good thing," Little said. As bad as it would be to destroy another populated area, he added, "what's the alternative? It's worse."

The interceptors could also be mistaken as hostile missiles by nearby nations.

"The interceptor trajectories from North Korea are generally to the northwest," noted a critical 2003 report from the American Physical Society, a leading scientific organization. "An interceptor fired in defense runs the risk of triggering retaliatory action by China or Russia."

Little said critics' concerns and a funding cut by Congress prompted his agency to restructure the development program for the boost-phase missiles.

Now a preliminary system will be produced before full development. If Northrop can't demonstrate that the components work within three more years, the agency may rethink or cancel the contract.

But the alternatives are also problematic.

Some advocates of missile defense in Congress insist that only a space-based system — a new Star Wars — could provide sure global coverage.

But an orbital defense would pose even more formidable technical challenges and cost up to \$224 billion, the congressional report said.

To mount a credible orbital system against North Korea and Iran, up to 10,909 interceptors, together weighing more than 1,000 metric tons, would be needed, the congressional report said. That would be more than twice the projected weight of the completed International Space Station, the largest space assembly in history.

<http://www.latimes.com/news/printedition/la-sci-boost25dec25.1.3661086.story>

[\(Return to Articles and Documents List\)](#)