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New York Times
August 20, 2008
Pg. 17

Some Democrats Urge Delay In Building A U.S. Missile System In Eastern Europe

By Eric Lipton

WASHINGTON — As the Bush administration speeds ahead with plans to construct a missile defense system in Eastern Europe, some Democrats in Congress want to put on the brakes, saying it has not been adequately tested. Secretary of State Condoleezza Rice was scheduled to be in Warsaw on Wednesday to sign an agreement on the missiles with Poland, which agreed to the basing of 10 interceptors last week, after the Russian attacks on Georgia. Justified as a defense against a missile attack on Europe by a rogue nation like Iran, the installation has provoked outrage from Russia.

Even before the agreement was reached, the Bush administration had proposed spending \$712 million in the coming fiscal year to start digging silos in Poland; installing a related radar system in the Czech Republic, another former Soviet satellite that is now a NATO member; and buying initial parts for the first interceptor missiles.

But Democrats are now questioning all that spending as premature.

“Go ahead and move on with research and development,” said Representative Ellen O. Tauscher, Democrat of California, who is chairwoman of the House subcommittee that oversees the missile defense program. “But as far as putting holes in the ground in Poland, we are saying no.”

The conflict between Georgia and Russia has complicated the debate.

While the Bush administration has long argued the missile defense system is not motivated by any Russian threat, Republicans in Congress intend to use the recent events to push for an immediate start of construction.

“It is going to be easier to make our case on Capitol Hill now,” said Representative Trent Franks, Republican of Arizona, a proponent of the program, “as this has reminded Poland and some of the other nations formerly dominated by the Soviet Union that the coercive Russia mind-set of militarily threatening your neighbors has not completely disappeared.”

The two presidential candidates have also taken sides, with Senator John McCain supporting quick construction while Senator Barack Obama is urging caution, saying the system is unproven.

As designed, the European system would be the latest version of a long-range missile system that is already partially installed in Alaska and California.

It would be essentially useless against a Russian attack because the interceptor missiles that are based in California and Alaska, or that would be based in Europe, are so few that they could easily be overwhelmed by the immense Russian missile arsenal.

But if North Korea sent one or two missiles toward the United States, or Iran sent a couple toward Europe, the American system is meant to knock them down.

During the development of the system installed in the United States, which is now considered operational, the missiles went through a series of tests, and the Defense Department claimed successful intercepts in six of the nine tests conducted since 2001.

A promotional video released by the main contractor, the Boeing Corporation, shows military personnel celebrating with high-fives after destroying a missile sent by a fictional enemy.

But the Pentagon’s own test and evaluation office says the technology, particularly in the version planned for Europe, remains unproven.

The Europe-based interceptors would have less time to knock out the approaching threat, given the shorter distance between Iran and Europe than between North Korea and the United States.

The system in Europe would also rely on an untested two-stage rocket, instead of the three-stage rockets now used on the 24 interceptor missiles in California and Alaska.

Pulling it all together in Europe, the Pentagon’s testing office reported last year, “will be a significant challenge.” More engineering work was needed before tests could prove the system’s effectiveness, the office said.

Lt. Gen. Henry A. Obering III, director of the Missile Defense Agency, said that the system, called the Ground-Based Midcourse Defense System, has proved through a series of continuing tests to be reliable, and that the changes being proposed were not radical.

“Is this a perfect system? Absolutely not,” he said. “Is it embryonic? No, we are well beyond that.”

This spring, the House Armed Services Committee voted to withhold authorization for most of the requested funds for the initial construction in Poland, and proposed language that would bar spending to build the system, until the secretary of defense certified that it was reliable.

General Obering said he agreed that the missiles should not be deployed in Europe until the testing was complete, which he said was likely to be in 2010. But construction should proceed, he said.

“We can’t wait until the Iranians launch a long-range missile and then start worrying about building out the site,” he said. “If you do that, you are way behind the curve.”

The conflict between Georgia and Russia has helped turn public opinion in Poland in favor of the agreement with the United States, according to a poll released this week by Rzeczpospolita, a leading newspaper there.

The Bush administration, as part of the package, agreed to place a battery of Patriot missiles — shorter-range defensive interceptors that could, at least in theory, be used against a limited Russian conventional attack.

<http://www.nytimes.com/2008/08/20/washington/20congress.html?ref=world>

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New York Times

August 20, 2008

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Don’t Loosen Nuclear Rules For India

By Edward J. Markey and Ellen O. Tauscher

In the next day or so, an obscure organization will meet to decide the fate of an Indian nuclear deal that threatens to rapidly accelerate New Delhi's arms race with Pakistan — a rivalry made all the more precarious by the resignation on Tuesday of the Pakistani president, Pervez Musharraf.

Nonetheless, President Bush is lobbying the Nuclear Suppliers Group, which governs international nuclear commerce, to waive its most crucial rules in order to allow the trade of reactors, fuel and technology to India. If the president gets his way, the Nuclear Nonproliferation Treaty — for 50 years, the bulwark against the spread of nuclear weapons — would be shredded and India's yearly nuclear weapons production capability would likely increase from 7 bombs to 40 or 50.

India's nuclear history is checkered at best, and New Delhi has been denied access to the international nuclear market for three decades. The reasons are well known: the country has never signed the nonproliferation treaty or the Comprehensive Nuclear Test Ban Treaty, it misused civilian nuclear technology to produce its first nuclear weapon in 1974, and it continues to manufacture nuclear weapons to this day.

Paradoxically, the Nuclear Suppliers Group was formed in direct response to India's illegal 1974 nuclear test. Its central purpose is to ensure that no other country exploits foreign nuclear energy assistance to make a bomb, as India did. If the group accedes to President Bush's dangerous request, countries such as Iran and North Korea would certainly use the precedent to their advantage.

The Indian nuclear deal threatens international security not only by undermining our nuclear rules, but also by expanding India's nuclear weapons program. That's because every pound of uranium that India is allowed to import for its power reactors frees up a pound of uranium for its bomb program.

Pakistan, with its unstable government and Al Qaeda sanctuaries, is already ratcheting up its nuclear weapons program in an attempt to keep pace with its regional rival. Just last month, the Pakistani government darkly announced that waiving the nuclear rules for India "threatens to increase the chances of a nuclear arms race in the subcontinent."

Because changes to these international rules can be made only by unanimous agreement, every country in the 45-nation group has the ability and the duty to insist that this flawed nuclear deal be improved and to ensure that nuclear trade with India cannot benefit New Delhi's nuclear weapons program.

Thankfully, there is an easy solution. The group can say yes to nuclear trade with India if two simple conditions are met. First, India must sign the Comprehensive Nuclear Test Ban Treaty, a step already taken by 178 other countries and every member state of the Nuclear Suppliers Group. After all, why should the group's members grant India a huge exemption from the rules that they themselves are supposed to follow?

Second, India must agree to halt production of nuclear material for weapons. That doesn't mean that India has to give up the weapons it has, or even that it cannot make more weapons with the nuclear material it has already produced. But by closing down its manufacturing of new plutonium and highly enriched uranium, India would prove to the international community that opening up nuclear commerce would not assist, either directly or indirectly, its nuclear weapons program.

This deal was foolish when Pakistan was relatively stable; with Mr. Musharraf gone, an arms race on the subcontinent would likely be more difficult to control. But even if the president continues to insist on the deal, he can't do it alone. He needs the 44 other countries in the Nuclear Suppliers Group to acquiesce. And the group, created to prevent the further spread of the atom, would vote itself out of existence if it allowed India to have nuclear technology with no strings attached.

Edward J. Markey, a Democrat of Massachusetts, is co-chairman of the House Bipartisan Task Force on Nonproliferation. Ellen O. Tauscher, a Democrat of California, is chairwoman of the House Strategic Forces Subcommittee.

<http://www.nytimes.com/2008/08/20/opinion/20markey.html?ref=opinion>

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Washington Post

August 21, 2008

Pg. 9

U.S. And Poland Seal Missile Pact

Deal on Defense System Signed Despite Russian Warnings

By Karen DeYoung, Washington Post Staff Writer

WARSAW, Aug. 20 -- The United States and Poland signed an agreement here Wednesday to place parts of a U.S. missile defense system on Polish territory, finalizing a long-negotiated deal in the face of Russian warnings that Poland would become a potential target for attack.

At a signing ceremony with the Polish political leadership, Secretary of State Condoleezza Rice said the system, which will place 10 missile interceptors and more than 100 U.S. troops here, will "help us to respond to the threats of the 21st century."

The agreement, suddenly concluded after 18 months of negotiations, came at a time of heightened tensions between Russia and the NATO alliance over the war in Georgia. NATO on Tuesday said it will suspend "business as usual" with Russia after its invasion of its southern neighbor.

Despite pledges from Moscow that it would withdraw its troops, Rice said there was little sign Wednesday that the Russians are ending what NATO has called their "occupation" of Georgia. German and French officials voiced similar charges Wednesday that there was no sign that a withdrawal had begun in earnest.

In a continuation of tit-for-tat rhetoric over Georgia, Moscow said Wednesday that it will "freeze all military cooperation with NATO and allied countries," according to a statement by the Norwegian Defense Ministry reported by the Associated Press. Norway, a NATO member, said it had received a telephone call from the Russian Defense Ministry.

The Polish-based interceptor rockets, along with a radar installation to be based in the Czech Republic, will provide a European base for a defense system the Bush administration has insisted is not aimed at Russia but at "rogue states" such as Iran.

John Rood, undersecretary of state for arms control and nonproliferation, negotiated the Polish deal, and said there was no direct correlation between the timing of the missile defense agreement and the situation in Georgia. But "obviously," he said, it was finalized within a "certain environment."

In comments to reporters, Rice said that she and other officials had "personally talked with the Russians many times" about measures the United States could take to demonstrate that the system is intended to counter "small missile threats of the kind that Iran or North Korea might impose, and not aimed in any way at Russia."

Russia contends that the system would allow the United States to peer deep into its airspace and could be the precursor to a larger system that would be effective against Russia's huge strategic missile arsenal.

A senior Russian general, Anatoly Nogovitsyn, said last week that it was "100 percent certain" Poland was "making itself a target" by entering into the agreement. The interceptors reportedly will be based in northern Poland about 800 miles from Moscow.

As part of the missile deal, the written text that the two sides signed said the United States will provide "substantial assistance to support Poland's military modernization efforts," including a battery of four Patriot missiles and a U.S. troop contingent. The Warsaw government made clear that it wants the Patriots as a defense against possible aggression from Moscow.

<http://www.washingtonpost.com/wp-dyn/content/article/2008/08/20/AR2008082000495.html>

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USA Today

U.S.-Poland Missile-Base Deal Riles Russia

From staff and wire reports

Russian and U.S. officials exchanged sharp words Wednesday over a planned missile-defense system in Poland, reflecting worsening relations between the two countries in the wake of Russia's offensive into Georgia.

The latest disagreement came as the United States and Poland signed a deal to place a U.S. missile-defense base 115 miles from Russia's westernmost fringe.

"Russia in this case will have to react, and not only through diplomatic protests," Russia's Foreign Ministry warned in a statement on its website. It did not elaborate, but Russia has long opposed the missile system.

"Poland, by deploying (the system), is exposing itself to a strike -- 100%," Col. Gen. Anatoly Nogovitsyn was reported as saying Friday by the Interfax news agency.

The United States has said the system is defensive and is designed to repel an attack from such countries as Iran or North Korea.

"Missile defense, of course, is aimed at no one," Secretary of State Condoleezza Rice said. "It is in our defense that we do this."

Some of the rhetoric of recent weeks echoes the Cold War era.

The tensions are at "a new level," though it is not a return to the bitter ideological struggle of the Cold War, said Leon Aron, an analyst at the American Enterprise Institute, a conservative think tank based in Washington.

Russia, pumped up with oil revenue, has been asserting itself more boldly, particularly in the area it considers the Near Abroad. "It will be looking for other means of asserting itself," Aron said.

President Bush warned Russia against trying to seize two breakaway republics at the center of the conflict between Georgia and Russia.

"South Ossetia and Abkhazia are part of Georgia, and the United States will work with our allies to ensure Georgia's independence and territorial integrity," Bush said Wednesday.

The missile deal in Poland follows an earlier agreement to place a radar-tracking system in the neighboring Czech Republic -- another formerly communist country now a member of NATO.

Some Poles, whose country has been a staunch U.S. ally in Iraq and Afghanistan, also saw in it a promise of safety for themselves in the face of a newly assertive Russia.

"We have achieved our main goals, which means that our country and the United States will be more secure," Polish Prime Minister Donald Tusk told Rice after the signing. Along with the main deal, the two nations signed a

"declaration on strategic cooperation," aiming to deepen their military and political partnership.

It includes a mutual commitment to come to each other's assistance immediately if one is under attack, enhancing existing obligations both have as NATO members.

http://www.usatoday.com/news/world/2008-08-20-poland-us-deal_N.htm

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Washington Times

August 21, 2008

Pg. 23

N. Korea Rips War Game, Cites 'Deterrent'

By Kwang-tae Kim, Associated Press

SEOUL -- North Korea stepped up criticism of ongoing U.S.-South Korea military exercises, warning Wednesday that it would boost its "war deterrent" - a euphemism for its nuclear programs.

North Korea "will increase its war deterrent in every way as long as the U.S. and its followers continue posing military threats to it," a spokesman for the North's Foreign Ministry said in comments carried by the country's official Korean Central News Agency.

The remarks came two days after South Korea and the U.S. launched Ulchi Freedom Guardian, an annual computer-simulated war game and follow daily criticisms of the exercises in North Korean media.

The exercises come amid a dispute between the U.S. and North Korea over ways to verify the North's declared nuclear programs under an aid-for-disarmament deal.

North Korea often uses "deterrent," "war deterrent" or "nuclear deterrent" to refer to its nuclear programs. The country carried out an underground nuclear test blast in 2006.

The drill, which runs through Thursday, involves 56,000 South Korean troops and 10,000 U.S. forces in South Korea and abroad, and is aimed this year at preparing Seoul to retake wartime command of its forces from Washington in 2012.

North Korea regularly calls the drills a prelude to attack. Seoul and Washington have dismissed the North's accusations, describing the war games as purely defensive.

The Foreign Ministry spokesman Wednesday accused the U.S. and South Korea of planning a "pre-emptive nuclear attack."

On Monday, the North blamed the U.S. for delaying its removal from a U.S. terrorism blacklist. The U.S. has said it will delist North Korea from the list only after Pyongyang has agreed to a full nuclear verification plan.

The North's spokesman accused the U.S. for making "unjust demands" regarding the verification issue.

Separately, South Korea's top negotiator at the nuclear talks called for patience in putting in place the verification regime and asked for China to play a constructive role to help spur the process.

"It is likely to take more time as differences remain between the U.S. and North Korea," Kim Sook told reporters, according to the Foreign Ministry.

China since 2003 has served as host for the six-party talks on North Korea that also include Japan, Russia, South Korea and the U.S.

<http://www.washingtontimes.com/news/2008/aug/21/n-korea-rips-war-game-cites-deterrent/>

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INSIDE THE PENTAGON - *www.InsideDefense.com*

August 21, 2008

Study 'still in coordination'

Tardy Cruise Missile Defense Report Could Reach Hill By September

The Pentagon says a tardy report on cruise missile defense will be sent to Congress by the end of next month. House appropriators included a requirement for the study in the congressional report that accompanied their version of the fiscal year 2008 defense-spending bill. The study was due in early 2008 (90 days after the bill became law), but it has not hit Capitol Hill yet.

The legislation directs the defense secretary to provide a report on the development of cruise missile defense capabilities needed to protect the U.S. homeland, deployment of those capabilities, and integration of those capabilities into the ballistic missile defense system when feasible.

Pentagon spokeswoman Cheryl Irwin tells *Inside the Pentagon* that the cruise missile defense report is “still in coordination” at the Pentagon but should be issued by the end of the fiscal year on Sept. 30.

The Defense Department’s acquisition office, in concert with the Missile Defense Agency, U.S. Strategic Command, U.S. Northern Command and the Joint Integrated Air and Missile Defense Organization are preparing this plan.

“However, additional time is required to develop this report due to the complexity of the plan as well as issues associated with the identification of an organization with such vast roles and responsibilities,” James Finley, the Pentagon’s No. 2 acquisition official, informed lawmakers in a May 9 letter. *ITP* reviewed a copy of the letter, which predicts the report will be submitted to Congress in the fourth quarter of fiscal year 2008.

In the FY-08 legislation, House appropriators worried about “the lack of an integrated defense of the homeland against cruise missile, other low-altitude aircraft and short range missile attacks.”

House appropriators endorsed the plan for the head of STRATCOM to be the air and missile defense integrating authority, and for NORTHCOM to retain responsibility for the homeland air and cruise missile defense mission. But the lawmakers also slammed what they saw as insufficient progress with respect to developing and fielding the capabilities necessary for defense against such threats.

InsideDefense.com reported in February that Pentagon acquisition chief John Young had rejected a move by the Joint Staff to have the Missile Defense Agency take a lead role in cruise missile defense.

Young issued a Jan. 24 memo that supports the Joint Staff’s creation of a new air and missile defense entity called the Air and Missile Defense Integrating Authority (AMD IA). On Jan. 17, the Joint Requirements Oversight Council approved a new charter for the integrating authority and sent the charter to Deputy Defense Secretary Gordon England for approval.

Young endorsed the idea behind the charter, but he disagreed with the council’s backing of MDA as the cruise missile defense leader. -- *Christopher J. Castelli*

<http://insidedefense.com/secure/print/PENTAGON.pdf>

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INSIDE THE PENTAGON - *www.InsideDefense.com*

August 21, 2008

AT CLOSE RANGE

Tomorrow’s Army?

What does detecting aerosol chemicals and bioweapons on the battlefield have in common with creating a cloaking device? Ask Rich Hammond, a theoretical physicist with the Army Research Office. He discussed related research during an Aug. 19 conference call with bloggers.

“Recent progress in developing optical metamaterials allows unprecedented extreme control over the flow of light at both the nano and macroscopic scales,” Hammond said. “The innovative field of transformation optics, which is enabled by metamaterials, has inspired researchers to take a fresh look at the very foundations of optics and helped create a new paradigm for the science of light.”

Somebody pass the Cliff Notes. The word “nano” refers to something smaller than the wavelength of light. And “metamaterials” simply means the stuff is made by people. What does this all mean for the warfighter?

Hammond said that within two years the technology might be used to create a lens capable of identifying chemical or biological weapons in a cloud. This would be “an enormous improvement, and not just on the battlefield,” Hammond said. Nanomanufacturing could create all kinds of materials that could go into electronic and optical devices such as night vision goggles and sensors, he said.

What about that cloaking device? In principle, metamaterials could also be used to create a cloaking device for a person, a vehicle or even a building, but it won’t happen for many years, Hammond said.

“What we have demonstrated in the lab is that it works for a cylindrical symmetry, meaning as long as you’re looking like at eye level along the ground, it can be cloaked. And we’ve demonstrated that only at microwave

frequencies, which is like radar a little bit.” There is still the problem of figuring out how to cloak an object from above -- in other words, from all directions.

Another key challenge for cloaking, Hammond said, is developing technology that works across the electromagnetic spectrum.

The “biggest single hurdle” is making the material, he said. The sort of device envisioned by the Army would not require a power source. Once the metamaterial is created it would simply have the cloaking properties, he said.

And then there’s the matter of being able to see out. “The biggest restriction of all is if light can’t get in, then you can’t see,” he said. “So you’re blind in there. . . . There might have to be auxiliary sensors.”

Would a cloaked person be able to move around? Developing a “conformal cloak,” that could be molded to a body, would be “even more difficult,” he said. “But if you had an installation that’s fixed, like a building or a tank or something, and you wanted to get behind a cloaking region, that’s feasible,” he added.

We’re a long way off from Wonder Woman’s invisible jet.

<http://insidedefense.com/secure/print/PENTAGON.pdf>

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New York Times

A Trained Eye Finally Solved the Anthrax Puzzle

By NICHOLAS WADE

Published: August 20, 2008

When the Federal Bureau of Investigation announced it had cracked the long-unsolved anthrax case, the turning point cited by the bureau was its identification of a laboratory flask as the source of the anthrax.

The dots, or in this case more than a thousand separate anthrax samples, were connected with the help of a group of scientists working secretly for some seven years. They succeeded by using a combination of new techniques not even invented in late 2001 when the anthrax-laced letters were sent, and that most old-fashioned attribute of expert scientists and detectives: a trained eye.

Now, in their first interviews, after being released this week from their vows of silence, several scientists explained how they charted a new frontier in microbial forensics, one that could have the same evidentiary power as DNA fingerprinting in criminal cases.

The scientists say they are confident the F.B.I. has identified the source of the anthrax, a flask in the custody of Bruce E. Ivins, whom the F.B.I. considers to have been the perpetrator of the attacks. But almost a hundred other people were known to have had access to cultures from the flask, and the scientists say they have no opinion as to whether Dr. Ivins, who committed suicide last month, was the culprit. Some former colleagues and other experts have questioned whether the government was right in suspecting Dr. Ivins, a researcher at the Army Medical Institute of Infectious Diseases in Fort Detrick, Md. But the technical feat of matching the attack anthrax to its source is itself a gripping tale of scientific detection.

The scientific chase began in late 2001 as the first person to contract anthrax from powder in a letter lay dying in a Florida hospital. The victim, Robert Stevens, 63, a photo editor at The Sun, a tabloid, was suffering from pulmonary anthrax, and the F.B.I. needed to know whether the anthrax in the attacks, which began a week after Sept. 11, was natural, or a biological weapon.

A sample of anthrax from Mr. Stevens’s body was flown to Paul Keim, a biologist at Northern Arizona University who two years earlier had developed a test for distinguishing the various strains of anthrax found in nature and in biological weapons laboratories. Of the anthrax strains used as weapons, the most virulent was one known as the Ames strain.

Dr. Keim confirmed the fears of intelligence agencies: it was the Ames strain that infected and eventually killed Mr. Stevens.

Dr. Keim’s test could tell two strains of anthrax apart but it could not tell the bureau what it needed to know next, which of the many cultures of Ames anthrax around the world the attack anthrax might have come from.

The F.B.I. decided to go back to basics and to try decoding the entire DNA sequence — some five million units — of the anthrax genome to see if some clues to its source might be developed. For this job it turned to the Institute for Genomic Research or TIGR, a leader in decoding the genomes of microbes. Its director was then Claire Fraser-Liggett, who is now at the University of Maryland. The F.B.I. asked her to form a group, with as few people as possible, to decode an anthrax genome, without telling her it was the one that had killed Mr. Stevens.

In contrast to the way science is usually done, the research overseen by the F.B.I., which took seven years to finish, was highly compartmentalized. The scientists, who work at academic institutions, say they did not understand important details of the case until a news conference on Monday — which they and their scientific directors in the F.B.I. attended.

For the bureau, the compartmentalization was an essential safeguard against the nightmare that one of their many advisers might turn out to have prepared the attack anthrax. "It may have been in people's minds that someone in the room could have been one of the perpetrators, which ended up being the case," said Dr. Chris Hassell, the F.B.I. laboratory director.

By early 2002, the TIGR team had completed the genome and were able to compare it with a culture of Ames anthrax maintained at Porton Down, the British biological weapons establishment. Anthrax is a highly stable organism that changes very little from one generation to another. But the scientists found several differences between the Stevens and Porton Down genomes, raising the possibility that the source of the attack strain might be distinguishable from other cultures of Ames anthrax.

"The finding was very good news for the investigation by giving hope that molecular forensics might bear fruit but, if so, large numbers of samples would need to be analyzed," Dr. Fraser-Liggett said.

All Ames anthrax is derived from a cow that died in Texas in April 1981. The F.B.I. acquired a sample from Fort Detrick of the original strain, known as the Ames ancestor. Decoding began on that, with the idea of constructing a genealogy that would show the Ames ancestor begat the source culture which begat the attack strain.

The TIGR team decoded the Ames ancestor and then turned to decoding the anthrax from one of the attack mailings. Each decoding took three to four months and cost about \$250,000, said Jacques Ravel, a leading member of the TIGR team who is also now at the University of Maryland.

But when the decoding of the attack genome was finished in 2002, the TIGR scientists had a major surprise and disappointment. In virtually all of its five billion units, the attack anthrax was identical to the Ames ancestor. There were no differences that could tie the attack strain to any of the many known cultures of Ames held in laboratories around the world.

At the regular meetings the TIGR scientists held with the F.B.I., they received very little information or feedback. But they could tell that their counterpart scientists in the bureau were as discouraged as they were, Dr. Fraser-Liggett said. Anthrax genomes looked like a dead end.

Then an Army microbiologist from Fort Detrick made an unexpected discovery. Using an old-fashioned microbiological technique, he spread out some attack spores on a bed of nutrient and let each form its own colony. All the colonies looked identical except one, which, to his trained eye, seemed very slightly different. Different-looking colonies are called morphotypes or just "morphs."

"Had that task been assigned to someone less experienced, these morphotypes might never have been seen or their significance never realized," Dr. Fraser-Liggett said.

Because of the obvious possibility that the morph might look different because its genome was different, the F.B.I. asked the TIGR team to decode its genome. Four months later, the TIGR scientists were elated when they discovered the morph had a major genetic change in its genome, known as an indel, short for insertion or deletion of DNA. "We were extremely excited," Dr. Fraser-Liggett said.

With the morph, the attack strain was at last developing a genetic signature of its own. Though 99 percent of its spores were identical with the Ames ancestor, some 1 percent or less were morphs.

Dr. Ravel was asked to decode seven more morph genomes, a task that took two years. He could do only one at a time for fear of cross-contamination in his laboratory. Dr. Fraser-Liggett said she did not know why the F.B.I. did not ask other laboratories to share the task and speed up the critical process.

One of the many mysteries the TIGR team had to live with under the bureau's management was the puzzle of why the attack spores contained as many morphs as they did. At the news conference they learned why, when an F.B.I. scientist explained that the flask in Dr. Ivins's custody, known as RMR-1029, held the product of 13 production runs of anthrax made at the Army's Dugway Proving Ground and 22 spore preparations made at Fort Detrick. Some 160 liters of material, the scientist said, had been concentrated into the liter held in the RMR-1029 flask.

The vast number of spores, and the many different culturing procedures, Dr. Keim said, "guarantees you will see these mutants, and when you mix them together you will have a characteristic signature."

Other scientists chosen by the F.B.I. selected four of the morphs as having the most reliable indels. All the attack letters contained these four morphs as well as the predominant form of Ames ancestor-type spores. The bureau at last had a signature of the attack strain.

Hoping for just this breakthrough, the bureau had been building a repository of Ames anthrax samples, taken under subpoena from laboratories around the world. As the morphs became available, the F.B.I. started testing samples. At first, some had one or two of the morphs. None had three of the morphs.

By late 2005 to 2006 it became clear that just eight of the 1,070 samples collected included all four morphs. And one of the samples was the ancestor of the other seven. The seven samples came from Fort Detrick and one other laboratory in the United States, F.B.I. scientists said at the Monday news conference, held at F.B.I. headquarters. The source of the seven was a master flask of Ames anthrax known as RMR-1029 which was kept by Dr. Bruce Ivins. "That's when the genetics caught up with the investigators," a Department of Justice prosecutor said.

There, the scientific conclusions end. The bureau then began a second phase of the inquiry, that of ascertaining who had access to the flask and its seven descendants. The F.B.I. investigated almost 100 scientists who had had access to cultures from the flask or were in some way associated with them.

At the news conference, it emerged that Dr. Ivins had in fact submitted two samples of RMR-1029, one in February 2002 and a second in April 2002. The second tested negative. The F.B.I. rejected and destroyed the first sample because it had not been prepared according to a strict protocol that the F.B.I. says Dr. Ivins helped in devising.

A duplicate of the first sample was later located in Dr. Keim's laboratory, where all duplicates were sent, and tested positive. Asked why Dr. Ivins would submit a true sample of his flask in February but a false one in April, the F.B.I. scientists said they could not speculate about his motives.

Dr. Keim said he believed the bureau had correctly identified the source of the attack anthrax. "The science on that is pretty solid," he said. As to whether Dr. Ivins was the perpetrator, Dr. Keim said that only a jury could make that decision. He said Dr. Ivins had been a friend and he faulted the F.B.I. for not having prevented his suicide. "Whether Bruce did it or not I prefer not to think about," he said.

Dr. Fraser-Liggett said, "I am absolutely convinced the F.B.I. has the right source flask," but added that she had no opinion as to who the perpetrator might be.

<http://www.nytimes.com/2008/08/21/science/21anthrax.html?pagewanted=1& r=1>

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Atlanta Journal-Constitution

August 22, 2008

Military Halts Shipments Of Lethal Germs, Toxins

By Pauline Jelinek, Associated Press

Washington--Military leaders have suspended some activities at biological research laboratories to review safety rules for some of the world's deadliest germs and toxins, including how they are shipped through FedEx and other civilian carriers.

Defense officials said the action is part of a larger review ordered after Bruce Ivins, a researcher at an Army lab, committed suicide last month rather than face charges in the 2001 anthrax attacks that killed five people.

Navy and Air Force officials said Thursday that they are temporarily halting shipments of dangerous biological agents to and from their medical and research labs.

They also said that during the review, they won't allow any employees to handle such materials inside their labs unless the employee is enrolled in a special program to do so--or monitored by someone who is enrolled.

The Army said for the first time Thursday that it had halted its shipments Aug. 8-14 for a similar review of procedures--and then tightened some. The Army has six, Navy five and Air Force two labs where biomedical research is done to support counterterrorism efforts, research protection for the armed forces and to keep track of infectious diseases across the globe. Employees work with a range of dangerous materials such as anthrax and germs that cause Avian flu and encephalitis.

Officials said outside shippers that previously had to have personnel certified by the government for handling hazardous materials now also will have to provide two drivers for the deliveries--both with classified security clearances. Procedures also are expected to be tightened for commercial air shipments.

<http://www.ajc.com/search/content/news/stories/2008/08/22/biolabs.html>

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