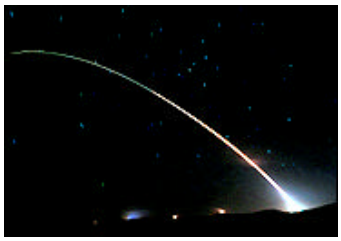
ALASKA MISSILE DEFENSE WEEKLY
(Forty-Third Edition)

Compiled by: Ms. Hillary Pesanti, Community Relations Specialist
Command Representative for Missile Defense
907.552.1038
hillary.pesanti@elmendorf.af.mil



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ALASKA SPECIFIC NEWS BREAKS #43

DECEMBER 23, 2002-DECEMBER 27, 2002

SPACE-BASED FORT GREELY OPTION, Defense Daily, December 20, 2002. Missile Defense Agency (MDA) officials announced this week that they are beginning the search for a contractor to develop a ground-based kinetic energy boost phase interceptor (KE-BPI), which possibly may be followed by a space-based KE BPI test bed in 2004. The MDA plans to award up to three firm-fixed price eight-month contracts in April for a total of $10 million. After the concept development time frame is over, one contractor will be selected to develop and test the new KE BPI. This announcement is one of several steps taken recently by the United States toward weaponizing space. $30 million was appropriated for space-based kill vehicles in the FY 03 budget; also, last summer, a miniature space-based kill vehicle research and

development program was established. Critics are concerned that this KE BPI program will unsettle those in this country and abroad who are leery of militarizing space. CDI Vice President Theresa Hitchens comments, "Space weaponization is a major controversial issue with almost every other country in the world now calling for a ban on such weaponry. The political fallout from such a decision is likely to be severe."

WILL MISSILE DEFENSE BE READY ENOUGH IN '05? Anchorage Daily News, December 24, 2002. If there is one thing missile defense advocates and critics agree on, it's that the technology isn't ready yet. Where they differ is on whether the technology will be ready enough three years from now to meet President Bush's accelerated deployment plan announced last week. Even under the Pentagon's best-case scenario, the missile defense system, expected to be fielded by the end of 2005, will be able to shoot down no more than 20 incoming enemy rockets before all available interceptor missiles are spent. And that assumes that jury-rigged radars function flawlessly the weather is cooperative, half-tested missiles don't err and the enemy doesn't use decoys or other tricks. "We think that this modest and initial capability is both warranted but will also be very, very useful," said J.D. Crouch, assistant secretary of Defense for international security, when plans were unveiled last week. Bush's order to field the missile defense system in the next three years forces what has been a developmental program to suddenly -- some people say prematurely – become a deployment program, skipping a testing phase.

Traditionally, new weapons systems go through two phases of testing: developmental, in which technology is tested piece by piece under controlled conditions; and operational, in which the pieces are put together and tried. So far, the ground-based interceptors at the center of the missile defense system have undergone eight of at least 19 planned developmental tests. Of those, five were successful. Pentagon officials say five out of eight is good for a weapons system at this stage of development. Critics say it's not good enough to skip the operational phase and move directly to deployment. "Normally you don't deploy until you're done with developmental testing and operational testing." Said Lisbeth Gronlund of the Union of Concerned Scientists. She contended that the Pentagon is setting aside its standards to rush the missile defense system's deployment: "If this were a tank or a gun, you couldn't do this." To meet the president's timetable, the Pentagon will have to speed development of some new equipment and jury rig other systems. There are three main parts to a ground-based missile defense system. The first are interceptor missiles, which home in on a target to destroy it. The second are booster rockets, to put the interceptor missiles into the atmosphere. The third are radars and other sensors to detect and track an enemy missile through its trajectory.

The most developed technology is the interceptors, which are equipped with radars that help them destroy the target. During a Pentagon briefing last week, Missile Defense

Agency director Lt Gen Ronald Kadish showed impressive footage of interceptor tests, with missiles streaming through the air, adjusting their trajectories and striking the target with a puff of smoke and debris. But, critics point out that the tests are highly scripted and still have been successful only five out of eight tries. More troublesome, experts say, are the other two pieces of the technology. So far, the Pentagon has not developed a booster rocket that can carry the missile into the atmosphere fast enough. The tests have been conducted on modified Minuteman missiles, but they are too slow for anything except tests. "I don't like where we are in terms of being developed with the boosters. That is a fact. Everybody knows that," Kadish said this week. He vowed to make progress: "Calendar year '03 is the year of the ground-based booster." Perhaps the thorniest challenge will be piecing together a radar and sensor system that will be able to identify and track incoming missiles and allow military officers to figure out which interceptors to use and where to send them. Ideally, the Pentagon wants to pout in place a ground-based radar system known as "X-band," a low-wavelength radar sensitive enough to distinguish decoy missiles from warheads. It also wants to deploy a space-based infrared system, known as "SBIR-High," to replace the existing satellite system. And it wants to add lower-orbit infrared sensor satellites, known as SBIR-Low, to improve the system's tracking ability.

These systems are under development but are years away from deployment. So to support the early missile defense deployment, the Pentagon plans to upgrade and employ existing radar systems. First, the military plans to upgrade a Cold War-era radar on Shemya Island. LTC Rick Lehner, spokesman for the Missile Defense Agency, said computers and software will be installed so the radar system can handle the volume of lightning-fast calculations needed for a missile defense system. In addition, the United States has asked Great Britain and Denmark for permission to upgrade similar radars on their territories – at Fylingdales Royal Air Force Base in England and at Thule Air Base in northern Greenland. That request is under review. Lehner said the three radars would provide adequate coverage to operate the initial missile defense system. Critics disagree. They claim the radars will be unable to distinguish decoy missiles from warheads. And they say the Cold War-era radars are pointed in less than optimal directions.

The critics contend that as a result, the missile defense system will likely be adequate against a threat from North Korea but would be essentially useless against a ballistic missile launched from a Middle Eastern country, which would probably be aimed at East Coast population centers. Leonard said the planned system would be adequate against all "anticipated" threats from the Middle East – that is, no Middle Eastern country has yet developed ballistic missiles that could reach U.S. territory. The system could not protect against a country or group that managed to acquire missiles from somewhere else, however. Moreover, despite Pentagon claims that the rudimentary ground-based missile defense would be able to protect all 50 states, critics say the

planned initial deployment leaves Hawaii with little or no coverage. As a result, the Missile Defence Agency plans to install the first X-band radar on an oilrig platform, so it can be moved around the ocean to provide the necessary coverage.

NEW MISSILE DEFENSE PLAN BOLSTERS MULTIPLE PROGRAMS, Aviation Week & Space Technology, December 23, 2002. Unresolved funding and other obstacles could impact the size of the missile buy and the fielding schedule. The Pentagon's revised missile defense strategy not only accelerates fielding of several systems, but also raises the prominence of the sea-based component over the land-based elements that have dominated planning in recent years. The Bush administration hopes to boost the U.S.' $8-billion annual missile defense spending, adding around $500 million in Fiscal 2004 and about $1 billion in Fiscal 2005 to deliver in the next three years an operational capability consisting of land-based and sea-based components. However, many of the details still need to be resolved, including exactly how many interceptors will be bought and what ships will be devoted to the effort. The political reaction to the proposal reflects long-drawn battle lines, with missile defense advocates warmly embracing it and long-standing detractors in Congress and among a coterie of think tanks voicing their objections. Long-time missile defense critic and Senate Armed Services Committee member Sen. Carl Levin (D-Mich.) argued that "with the exception of the Patriot system, which has been tested against theater ballistic missiles, the systems to be fielded will lack important components required for an effective defense. Neither the interceptor nor the radar to be used with the new national missile defense system have ever been tested against any ballistic missile target at all."

On the other hand, missile defense advocate and chairman of the House Armed Services procurement panel, Rep. Curt Weldon (R-Pa.), argued the move is overdue and that the administration should do even more. Weldon wants to see "more robust funding in the sea-based area." Additionally, he says, the Pentagon should be "a little more aggressive" in executing the Boeing 747-400F-based Airborne Laser (ABL) program. Weldon complained there has been a "lack of focus" regarding the system. The military should consider providing for a stronger test program, more testbed platforms and acceleration of the effort, if possible, he said. The Missile Defense Agency (MDA) hopes ABL will be ready in late 2004 to attempt its first intercept of a boosting ballistic missile. The military also wants to change the type of aircraft used to carry the system from a freighter to a regular 747-400, which Defense Dept. officials believe could better accommodate the crew and laser system. Although the administration's missile defense plan is likely to generate heated debate in Congress next year, Weldon and others note approval is likely. Under the revised program, the sea-based element is to consist of three operationally available Aegis radar-equipped cruisers capable of launching Standard Missile SM-3 interceptors. The move follows a year in which the system achieved intercepts in all three of its tests. The Pentagon plans to buy up to 20 SM-3s to

arm those vessels, says the MDA director, USAF Lt. Gen. Ronald Kadish. The ships are slated to be available by the end of 2005, with more likely to follow.

The 20 missiles will include those needed for continued testing of the sea-based system, so only a smaller number would be available for operational use. SM-3 builder Raytheon is expected to increase its missile production rate to one per month, said Defense Dept. officials. Raytheon has spent the past few months laying out plans on how it would increase production and still maintain quality on the interceptors, said Ed Miyashiro, the company's vice president overseeing the project. The increase in production could allow the company to avoid layoffs that otherwise could have occurred since SM-3 engineering efforts were slated to ebb. Miyashiro noted even higher production rates could be supported. One of the near-term hurdles for meeting the SM-3 goal could be a congressional funding cut in Fiscal 2003. Pentagon officials are trying to see if they can restore the money and thereby avoid a dip in the project's progress. In addition to the missile buy, 15 Aegis ships will be upgraded so their radar can be used to support missile defense engagements. Those radars could cue either the sea-based or ground-based missile defense systems and provide target coordinates early. The Pentagon also is developing a ship-based X-band radar that will eventually be added to the sensor mix to help cue defenses. Initially, the Aegis ships will be limited to operating either in a ballistic missile defense mode or in their traditional theater air defense role. While each ship would be able to switch between the two modes, being able to perform the missions simultaneously will have to await planned upgrades to the Aegis combat system.

In an effort to continue development of the sea-based system while fielding an operational capability, the Navy is allowing MDA to use the USS Lake Erie as a dedicated testbed rather than having it serve in that role part-time. The Lake Erie is slated to be used in five more intercept attempts to explore different portions of the Aegis/SM-3 performance envelope and residual hardware elements that have not been demonstrated. For instance, during the next test (FM-5) in the spring, a new multi-pulse divert and attitude control system for the kill vehicle will be exercised. The expansion of the ground-based component will build heavily on the missile defense testbed the Pentagon decided to build last year. It was to provide a limited, five-missile contingency capability around 2005. "The bottom line is, of course, the test infrastructure doesn't change," Kadish said. The major difference is that "instead of waiting . . . to turn it on to make it operational, we will attempt to make it operational from the beginning, starting now," he added. Moreover, the Ft. Greely, Alaska, infrastructure will grow to six interceptor silos from five. Four more interceptors will be based at Vandenberg AFB, Calif., for a total of 10 ground-based missiles to be ready by the end of 2004. The Pentagon wants to further boost the number of interceptors to 20 by the end of 2005 through the addition of 10 missiles at Ft. Greely.

Boeing, the prime contractor for the ground-based element, will decide next year which booster to use. Orbital Sciences Corp. and Lockheed Martin are developing competing designs, which should begin flight testing early next year. Integrated Flight Test No. 14 slated for the fall will be the first time one of the two is used in an intercept attempt. The competitor is likely to be used in the next test, according to an MDA official. Because of the need to quickly build a relatively large number of missiles "it is very possible that Boeing could select both boosters for use at Ft. Greely and [Vandenberg]," he added. "So it could be a mix of the two in order to get the numbers needed for both deployment and testing." The total number of interceptors the Pentagon will buy in the near future will have to exceed the 20 envisioned for the operational system, since testing will deplete the stockpile. Boeing is analyzing what that number should be, although funds available in 2004 and 2005 will likely dictate the answer, the official noted.

Additionally, exoatmospheric kill vehicle (EKV) provider Raytheon expects to double its production capability to meet the Pentagon's needs. That will mainly involve buying additional test equipment and some manufacturing hardware to grow to a rate of 2 EKVs per month, says Charles LaDue, Raytheon's program manager. Discussions with EKV suppliers have already taken place to support the faster pace. Delivery of the kill vehicles the Pentagon wants under the new program could probably be completed by around January 2005, LaDue said, although that will depend on detailed negotiations that have yet to take place. Raytheon's EKV facility could eventually grow to a rate of five EKVs per month, if the Pentagon wants even more interceptors.
Turning Vandenberg into an operational missile defense facility also requires the Pentagon to overcome several hurdles, including issuing an environmental impact statement. That work was already underway since Vandenberg was an element of the existing missile defense testbed, but it would now be amended to address the increase to four silos from two. MDA hasn't determined, yet, if It will build four new silos or refurbish existing ones. Initially, the ground-based system would provide coverage against missiles launched from Northeast Asia. Defense against missiles launched from the Middle East would follow in 2005 when early warning radars in the U.K. and Denmark are upgraded. The British government indicated earlier this month it would approve enhancing the Fylingdales-based radar; Denmark signaled its willingness to allow the upgrade of the Greenland-based early warning system a few weeks earlier. During the next two years, MDA plans at least 68 more flight tests and 58 more ground tests for both the ground- and sea-based components.

GLOBAL NEWS BREAKS #43
MONDAY, DECEMBER 23, 2002

MISSILE DEFENSE DEPLOYMENT TO BEGIN, CDI, December 23, 2002. On Tuesday Dec. 17, President Bush announced his intention to push for deployment of some sort of missile defense system by 2004/2005. He stated that he has "directed the Secretary of Defense to proceed with fielding an initial set of missile defense capabilities." At a press conference later that day, Missile Defense Agency (MDA) head Lt. Col. Ronald Kadish clarified what this will entail. Building on top of what was known as the "test-bed facility" in Ft. Greely, Alaska, the MDA will put six ground-based interceptors there and four at Vandenberg Air Force Base in California (which has been involved in the test program as the launch site of the practice target missiles) in 2004. In 2005, 10 more ground-based interceptors will be fielded. By the end of 2005, 10-20 sea-based interceptors — the Standard Missile (SM)-3 — will be fielded on three converted Aegis ships, with another 15 Aegis ships dedicated to surveillance. In addition, the Lake Erie Aegis cruiser that has been on loan from the U.S. Navy for testing of the SM-3 will be handed over to the MDA.

The accelerated production of the Patriot Advanced Capability (PAC)-3 missile, decided upon during debate of the FY 03 defense appropriation, will continue as planned if Congress can agree on where it will shift the funding from (presently, a large percentage of the PAC-3 acceleration dollars were to come from the ground-based and sea-based interceptors). Radars that will be used by the newly-deployed interceptors are: a sea-based X-Band radar; upgraded Cobra Dane radars on the Aegis cruisers; and, upgraded land-based early warning radars. The latter include radars located in the U.K. (at Fylingsdale) and Denmark (more correctly at Thule in Greenland, whose external affairs Denmark manages), so those two countries were formally asked for their permission on Wednesday for the first time. Administration officials were careful to refer to this latest development as a "modest" increase in U.S. capabilities, painting missile defense as, in the words of Secretary of Defense Donald Rumsfeld, an "evolutionary program, [that] will evolve over a period of time." However, critics immediately pointed out the program's lack of maturity and wondered why there was a need to rush to a 2004 deployment. CDI Research Associate Victoria Samson explains why this move is questionable in, "Deploying a Missile Defense by 2004: A Sham Defense to Meet an Artificial Deadline," which can be found in this week's issue of CDI's *Weekly Defense Monitor* - http://www.cdi.org/weekly/2002/issue43.html#1.

NORTH KOREA SAYS IT REGAINS ACCESS TO ITS PLUTONIUM, New York Times, December 23, 2002. North Korea said today that it had removed the equipment that international inspectors installed more than eight years ago to make sure that it would not make use of its large stockpile of plutonium to produce nuclear weapons.

Bush administration officials said they feared that North Korea could use that plutonium to manufacture five or six nuclear weapons within months. The action, coming one day after North Korea took similar monitoring equipment off a nuclear reactor, intensifies the crisis over North Korea's nuclear capability, at a moment when President Bush has tried to focus the world's attention on the threat posed by Iraq. It also poses a challenge to the newly elected government in South Korea. . . . "The 8,000-odd spent fuel rods are of particular concern because they could be reprocessed to recover plutonium for nuclear weapons," Louis Fintor, a State Department spokesman, said today, referring to the fuel rods that the Central Intelligence Agency estimates contain a total of about 30 kilograms, or 66 pounds, of plutonium. "They have no relevance for the generation of electricity." . . . A senior administration official said today that no one was looking at tougher measures against North Korea, like a blockade or economic penalties. But he warned, despite Mr. Bush's recent assurances that he had no intention of invading North Korea, that the United States might have to consider "non-diplomatic" actions if the North moved much closer to building new weapons.

PAKISTANI OFFERED NUKE AID TO IRAQ, Washington Times, December 22, 2002. A middleman claiming to represent the father of Pakistan's nuclear program offered Iraq help in building an atomic bomb on the eve of the Persian Gulf war, according to U.N. documents, diplomats and former weapons inspectors. Former inspectors, who spoke on the condition of anonymity, said Pakistani officials did not cooperate when the U.N. nuclear agency tried in the mid-1990s to investigate whether the scientist was behind the proposal. The former inspectors stopped short of saying Pakistan's government was involved in the offer to help Iraq build a nuclear weapon. . . . Pakistan denies any link to Pyongyang or Baghdad, and U.S. Assistant Secretary of State Christina Rocca last week said President Pervez Musharraf has given his assurance that nothing is being given to North Korea.

BUSH PLAN COULD LEAD TO U.S. FUNDING OF EUROPEAN MISSILE DEFENSE, Global Security Newswire, December 20, 2002. A Bush administration request to use bases in Britain and the Danish territory of Greenland for the U.S. national missile defense program could lead the United States to provide and fund, at least partially, missile defenses for Europe, defense experts said. Defense Secretary Donald Rumsfeld this week officially requested permission to improve U.S. radar capabilities at the Royal Air Force Fylingdales base in the United Kingdom and the Thule airbase in Greenland. By upgrading the existing early warning radars now operating at those sites, the United States could better track long-range missiles that Middle Eastern nations might someday possess. . . . The U.S. Missile Defense Agency, meanwhile, has said little on the idea of basing interceptors in Europe. Pentagon officials have stated repeatedly they have settled on no final “architecture” for the system they are developing, but they have been fairly specific about identifying systems that will operate in the Pacific Ocean arena. . . . Basing the ground-based interceptors in

Europe also would offer benefits for defending the United States, providing overlapping coverage with the Alaska missiles against a Middle East threat, according to the Boeing presentation. A Boeing slide depicted how interceptors could do the same job based in Poland rather than the United Kingdom, an idea that the British government would find anathema, said Plesch.

INITIAL MISSILE DEFENSE CAPABILITY TO COST AN ADDITIONAL $1.5B, Defense Week, December 23, 2002. Following on President Bush's pledge to have an operational ballistic-missile defense capability by 2004, the Defense Department last week said it would need an additional $1.5 billion spread between fiscal years 2004 and 2005 to do the job. Air Force Lt. Gen. Ronald Kadish, the director of the Missile Defense Agency, told reporters in a Dec. 17 briefing the funding would yield a "a modest increase to the capability of missile defense" over two years. And he promised an "aggressive" schedule of missile-defense intercept tests during that time. . . "We have, for the last two years at least, been appropriated somewhere in the neighborhood of $8 billion a year to do this very aggressive flight test program," said Kadish. "And ... fundamentally, what we're going to ask the United States Congress to do is add about $1.5 billion to our budget to get this job done over the next two years. . . ." J.D. Crouch, assistant secretary of defense for international security, said the Pentagon would apply a "spiral development approach" to building an operational missile-defense capability.

EDITORIAL - MR. BUSH'S FOLLY, St. Louis Post-Dispatch, December 20, 2002. HERE is how tough it would be for an enemy to defeat the missile shield that President George W. Bush this week decided to deploy in Alaska and California: The enemy (North Korea? Iraq?) could wrap a nuclear warhead in foam rubber or Styrofoam before strapping it onto an intercontinental ballistic missile, assuming the enemy had an ICBM, which it doesn't. The radar-absorbing material would fool the existing U.S. technology. Or, the enemy could pack a dummy warhead with thousands of tiny metal stars, the size and shape of children's jacks. This chaff would confuse the radars on Mr. Bush's exothermic killer vehicles. Or, the enemy could use cheap missiles that tumble end-over-end instead of spinning neatly like expensive U.S. and Russian ballistic missiles. The U.S. system can't kill missiles with unstable trajectories. In the grand scheme of things, a national missile defense shield — if one could be made to work — might provide a measure of security in an insecure world. That time has not yet come, and many experts — even some who advocate missile defense — are doubtful that it will soon. The technology is too expensive, and the defenses against it are too easy. Researching the technology of missile defense is prudent. But to deploy a flawed system against an uncertain enemy is folly.

TUESDAY, DECEMBER 24, 2002

SEVERAL OPPORTUNITIES EXIST FOR SUBORBITAL REUSABLE LAUNCH VEHICLES, Weekly space articles from ANSER by Perry Sims, December 24, 2002. A U.S. Commerce Department reports says several market opportunities exist for suborbital reusable launch vehicles, and others may be emerging. Emerging markets include military surveillance, commercial earth imagery, fast package delivery, high-speed passenger transportation, and advertising/promotion and space tourism. The report points out that although the space shuttle is the only RLV in existence, several private companies are working to develop much smaller suborbital RLVs. Suborbital RLVs, or space vehicles capable of reaching altitudes between 50 ñ115 miles above the earth's surface, are much less technically challenging to build than expendable launch vehicles like the Boeing Delta IV or Lockheed martin Atlas V, or orbital RLVs, like the space shuttle. According to the report, the advantages of suborbital RLV over expendable launch vehicles include better reliability and safety, quicker mission turnaround, more versatility, high flight-rate capability and lower operating costs. The development of dual-use suborbital RLVs-capable of performing a number of military, civil, commercial missions, could also significantly reduce operating costs.

The report pointed out that current suborbital markets are served mostly by expendable sounding rockets and include national missile defense tests, as well as high-altitude, astronomical and micro-gravity research missions. Each of these areas presents a viable opportunity for suborbital RLVs. For the national missile defense program, suborbital RLVs could be used to test system components such as sensors, and to release simulated warheads for system test. High-altitude research missions, such as those for plasma physics, solar physics and geo-space science, provide additional opportunities. In the report it was stated that suborbital RLVs can also be used on missions involving micro-gravity research, such as those involving protein crystal growth, cell function and electrophoresis, semiconductor materials production, fluid physics, combustion science and the development of new materials. Military surveillance and commercial earth imagery are especially promising opportunities for suborbital RLVS. Suborbital RLVs could provide pop up reconnaissance capability, a fleet of suborbital RLVS could provide hourly surveillance of areas of interest, whereas surveillance satellites' orbits are fixed.

STAR WARS: THE MODEST SEQUEL, Weekly space articles from ANSER by Dale McFeatters, December 24, 2002. A missile defense system is inevitable. Both the number of long-range missiles and the technology for building them are proliferating, and a country with even a modest industrial base, like Iraq, can build them. During the 2000 presidential campaign, President Bush pledged to deploy a system once in office. He freed himself to do so last year by opting out of the Anti-Ballistic Missile Treaty, and Tuesday the administration announced it would deploy a rudimentary long-range

missile defense system, 10 interceptors in 2004 and another 10 in 2006. The administration makes only modest claims for the system. Defense Secretary Donald Rumsfeld called it "better than nothing." In the current strategic environment, the system would defend against only one country: North Korea. The administration freely admits that the major missile powers - Russia and France, for example - could easily evade or overwhelm it.

The program also provides for mobile and sea-based short- and medium-range interceptors, but the heart of the system is the long-range interceptors - and these have shown themselves to be anything but foolproof in their ongoing tests. The Pentagon claims success in five of eight tests, but it uses an extremely generous definition of what constitutes "success." By most measures, a fixed date for deployment of at least the long-range component seems technically premature. The rocket boosters are unreliable, and the sophisticated X-band radar and sensor satellites vital to the system are still under development. The system will be expensive, $1.5 billion a year, which Congress must approve, on top of the $8 billion a year we're spending already. When Congress returns, it is fair to ask the administration whether the system is genuine defense or simply politics. The answer is likely somewhere in between.
Essentially the Bush administration is betting that the system will work when the time comes to activate it between 2004 and 2006. And it is hoping that once activated the system will evolve over time into an effective defense. It, in effect, a roll of the dice.

WEDNESDAY, DECEMBER 25, 2002

Christmas Day

THURSDAY, DECEMBER 26, 2002

MISSILE PLAN FACES OBSTACLES, Los Angeles Times, December 24, 2002…Bush's order to field the missile defense system in the next three years forces what has been a developmental program to suddenly -- some say prematurely -- become a deployment program, skipping an entire phase of testing…So far, the ground-based interceptors at the center of the missile defense system have undergone only eight of at least 19 planned developmental tests. Of those, five were successful. Pentagon officials say five out of eight is good for a weapon system at this stage of development. Critics say it's not good enough to skip the operational phase and move directly to deployment…The technological challenges facing the program are daunting. Pentagon officials say the best way to learn is by doing. Critics counter that expensive mistakes will draw money and energy from more practical steps that would provide more security… Even supporters admit that deployment within three years will be a challenge. In some ways, it is even more ambitious than the 1960s space race. Instead of trying to get one rocket to the moon, the system will have to have many rockets and

missiles and radars -- most still under development -- all working well and in concert. If the system fails, it won't be a crew dying; it could be thousands, even millions, of people…To meet Bush's timetable, the Pentagon will have to speed development of new equipment, and jury-rig other systems…The critics contend that as a result, the missile defense system will likely be adequate against a threat from North Korea, but would be essentially useless against a ballistic missile launched from a Middle Eastern country, such as Iraq or Iran, which would probably be aimed at East Coast population centers…In the end, the situation is similar to deciding whether a glass is half full or half empty. Both are true. The Pentagon has developed the technology to the point where it is possible to put something in the field in the next three years. But the question remains whether that something is better than nothing.

NEW MOBILE RADAR SYSTEM LOOKING OUT FOR IRAQI MISSILE LAUNCHINGS IN THE GULF, New York Times, December 26, 2002. The United States military has deployed a sophisticated ground-radar system here to help protect allied and American forces in the Persian Gulf region from Iraqi missile attacks, military officials say. The radar — called the Joint Tactical Ground Station — is a mobile Army system that alerts commanders to hostile missile launchings, using data from space-based satellites. The information is also relayed instantaneously to missile defense systems, like the Patriot, that are deployed in the region, to help intercept incoming missiles… The new radar, which was deployed here several months ago but only recently described in detail by officials here and in the United States, is one of several improvements the Pentagon has made since 1991 to detect and destroy Scud launchers and missiles, even after they have been fired…The European Command, whose area of responsibility includes most of Europe, and parts of Africa and the Middle East, including Israel, has units stationed in Stuttgart, Germany, that can be sent anywhere in its region. The Pacific Command has units at Osan, South Korea.

INITIAL MISSILE-DEFENSE CAPABILITY TO COST AN ADDITIONAL $1.5B, Space & Missile, December 26, 2002. Following on President Bush's pledge to have an operational ballistic-missile defense capability by 2004, the Defense Department last week said it would need an additional $1.5 billion spread between fiscal years 2004 and 2005 to do the job…The money would be on top of the $8 billion currently spent per year on the missile-defense research, development and testing effort. "We have, for the last two years at least, been appropriated somewhere in the neighborhood of $8 billion a year to do this very aggressive flight test program," said Kadish. "And ... fundamentally, what we're going to ask the United States Congress to do is add about $1.5 billion to our budget to get this job done over the next two years. And about a third of it, I think somewhere in that neighborhood, in the '04 time frame."…All told, the funding would support: 20 ground-based interceptors at two sites to intercept long-range missiles; An upgrade to Aegis-class destroyers and cruisers that would net their sensors together for use in missile-defense; Production of up to 20 sea-

based interceptors to target short- and medium-range missiles (three Aegis ships will be capable of firing interceptors; another 15 ships will perform surveillance).

RUSSIAN FOREIGN MINISTRY CRITICIZES JAPAN ON MISSILE DEFENSE, Associated Press, December 24, 2002. The Russian Foreign Ministry on Tuesday criticized Japan's recent decision to step up work with the United States on a bilateral missile defense system. Japan's defense chief said last week that his country was ready to advance from research on the system to the development stage. "We believe that theater missile defense systems should be set up not on the basis of narrow blocs but with a wide number of participants," Foreign Ministry spokesman Alexander Yakovenko said in a statement. "Theater missile defense" refers to the strategy of a country setting up a system not to protect its own territory from missile attack but to prevent an attack on an ally or on territory where a country's troops are deployed. "Such cooperation should be implemented with consideration for the provisions of the United Nations charter and not be directed against some third country," said Yakovenko, reflecting Russia's frequent criticism of the United States as inclined to act unilaterally. Russia also has long criticized U.S. efforts to build a national missile defense system, which was made possible after Washington withdrew from the Anti-Ballistic Missile Treaty that expired in June. Yakovenko on Tuesday said Washington's recent approach to Britain and Denmark to upgrade facilities in those countries for use in national missile defense "causes us regret. It diverts resources from counteracting real dangers and challenges and challenges, provokes an arms race, including in space."

CABINET OKS 0.1% CUT IN DEFENSE BUDGET, Japan Times, December 25, 2002. The Cabinet approved Tuesday a 0.1 percent reduction in the fiscal 2003 defense budget, down for the first time in four years. Defense spending for the year beginning next April amounts to 4.95 trillion yen, down 3 billion yen from the record-high initial budget for the current fiscal year, Finance Ministry officials said…Prime Minister Junichiro Koizumi's Cabinet approved the final budget plan Tuesday and will present it for approval to the Diet after it convenes in January, as part of the fiscal 2003 budget, which totals 81.79 trillion yen…The budget includes 1.9 billion yen for continued joint research with the U.S. on a ballistic missile defense system, down 72.5 percent from the current fiscal year.

FRIDAY, DECEMBER 27, 2002

JAPAN FEARS NORTH KOREA; U.S. PROMISES DEFENSE SHIELD, New York Times, December 26, 2002. With Japan increasingly worried about North Korea's missile arsenal and nuclear bomb programs, the United States has offered assurances that its Aegis destroyers are capable of shooting down medium-range missiles, the Japanese Jiji Press news agency reported today. Japan's defense minister, Shigeru Ishiba, won the assurances from Pentagon officials when he was in Washington earlier

this month, the agency said. North Korea is believed to have about 100 missiles with a range of 800 miles, enough to cover most of the Japanese archipelago. In 1998, North Korea alarmed Japan by sending a missile over its main island, Honshu. Although half a century has passed since the Korean War, Japan and North Korea do not have diplomatic relations. In public opinion polls, North Korea consistently tops the list of countries seen as threatening by the Japanese people. This week, news that North Korea is breaking international controls on its plutonium-producing reactors has dominated Japan's newspapers.

"It is extremely regrettable, and our country is concerned," a Foreign Ministry spokesman, Hatsuhisa Takashima, told reporters today of North Korea's moves to break seals and disable surveillance equipment at three nuclear-related sites in Yongbyon, North Korea.
North Korean nuclear technicians there today moved in and out of a reactor that had been closed since 1994, apparently moving in fresh fuel, according to Mark Gwozdecky, a spokesman for the International Atomic Energy Agency in Vienna. The United States fears the plant could be used to make nuclear weapons. The Atomic Energy Agency, which had been administering the controls, estimates that the North Koreans will have the five-megawatt reactor operational by the end of February. In a telephone interview today, a senior South Korean official concurred with that estimate. "We believe it will take one or two months to restart the reactor," said the official, Chun Young Woo, director general for international institutions at the Foreign Ministry. Mr. Chun scoffed at North Korea's claims that it decided to restart the reactor in order to generate electrical power. "The reprocessing facility doesn't produce electricity," he said. "Their objective has nothing to do with generating electricity."

On Tuesday, North Korea removed United Nations seals and surveillance cameras from a fourth nuclear site, including a reprocessing plant that produces weapons-grade plutonium. In the past few days, North Korea has cut seals and cloaked cameras at the Yongbyon reactor and its spent-fuel pond, as well as a fuel-rod fabrication plant and a reprocessing plant, according to Dr. Mohamed ElBaradei, director of the Atomic Energy Agency. "This rapidly deteriorating situation in the D.P.R.K. raises grave nonproliferation concerns," Dr. ElBaradei said in a statement, referring to the Democratic People's Republic of Korea, North Korea's official name. In the interview today, Mr. Chun said the Atomic Energy Agency's inspectors had been "walking around freely," unimpeded by the North Koreans, to try to see what was going on since the monitoring cameras were disabled.

A two-person team from the agency has been rotating in and out of Yongbyon since the reactor was shut down in the 1990's, but the agency now has three people at the site in hopes of offsetting the loss of the surveillance cameras, Mr. Chun said. Britain's foreign minister, Bill Rammell, said today that North Korea's recent actions were "very

worrying." "I think it is probably a fairly ham-fisted attempt to gain international leverage," he told BBC radio, "but our best analysis at the moment is that this is not a regime that is hell-bent on confrontation."

U.S. GETS WARNING FROM NORTH KOREA, New York Times, December 25, 2002. Seoul, South Korea, Dec. 24 - North Korea warned today of an "uncontrollable catastrophe" unless the United States agrees to a negotiated solution to a tense standoff over its nuclear energy and weapons programs. The statement, made amid mounting tensions with the United States, came as a stiff pre-emptive rebuff to a conciliation-minded newly elected president in South Korea, and a warning to other countries that their efforts to mediate the crisis will be futile. "There is no need for any third party to meddle in the nuclear issue on the peninsula," said North Korea's ruling-party newspaper, the Rodong Sinmun. Referring to the North Korean government by its Korean initials, the paper said: "The issue should be settled between the DPRK and the U.S., the parties responsible for it. If the U.S. persistently tries to internationalize the pending issue between the DPRK and the U.S. in a bid to flee from its responsibility, it will push the situation to an uncontrollable catastrophe." The North Korean defense minister, Kim Il Chol, went further, warning of "merciless punishment" to the United States if it pursued a confrontational approach to the emerging nuclear crisis. "The U.S. hawks are arrogant enough to groundlessly claim that North Korea has pushed ahead with a `nuclear program,' bringing its hostile policy toward the DPRK to an extremely dangerous phase," the state-run Korean Central News Agency quoted Mr. Kim as saying.

Some analysts here saw the defense minister's statement as a defiant response to comments by his American counterpart, Donald H. Rumsfeld, who said on Monday that the United States had enough military power to prevail over North Korea even if such a conflict occurred during a war with Iraq. The North's incendiary comments came as Pyongyang accelerated its takeover of nuclear fuel and reactors placed under international surveillance under a 1994 agreement with the United States. That pact, known as the Agreed Framework, was forged after a standoff remarkably similar to the current one. Today, South Korean officials said North Korea had begun taking steps to reactivate a five-megawatt nuclear reactor that had been mothballed under the agreement. North Korea completed the removal of the last International Atomic Energy Agency seals and disabling surveillance cameras at a fuel fabrication plant in Yongbyon, South Korean officials said on Tuesday. The facility is known technically as a "research reactor," but Western arms control experts say its true purpose is to produce plutonium for nuclear weapons.

"There are varying estimates on how long it would take them to reprocess the spent fuel, but they probably have plans to do it a lot faster than outsiders imagine - and will do so if their equipment works," said an American official who has studied North Korea's

nuclear programs for years. "Here are a few of the ugly signposts we might whiz past: asking the inspectors to leave, starting up the reprocessing line, finalizing their withdrawal from the Nonproliferation Treaty and declaring themselves a nuclear power with a `Korean bomb' intended to protect the whole of the Korean people by keeping the Americans from starting a war." Reflecting the sharp increase in distrust between the United States and South Korea amid a series of major demonstrations against the presence of 37,000 American troops in the country, the official added, "This will cause some secret shivers of pride amongst some in the South."
Both South Korea's outgoing president, Kim Dae Jung, and the man who will succeed him in February, Roh Moo Hyun, spent most of the day struggling to contain the crisis, which threatens to nullify the engagement policies they embrace.

"South Korea, the United States, Japan, China, Russia and the European Union are all strongly calling on North Korea to abandon the nuclear program, but the North is not listening now," Mr. Kim said during a cabinet meeting. Amid concerns over tensions between Washington and Seoul, Mr. Kim appeared to draw closer to the American position on the North, saying there could be no major cooperation between the two countries unless Pyongyang agreed to international controls on its weapons of mass destruction. "We can never join hands in the development of nuclear weapons, missiles and other weapons," Mr. Kim said. The new president, Mr. Roh, meanwhile, spent much of the day meeting with ambassadors of countries that have been involved in the region's crisis. "The president-elect requested cooperation from those concerned countries to help resolve the North's nuclear issue peacefully," said Mr. Roh's spokesman, Lee Nak Hyun.

Mr. Roh also spoke by telephone to the Japanese prime minister, Junichiro Koizumi. The two leaders "agreed to continue close cooperation among Japan, the United States and South Korea to bring about a peaceful solution to nuclear and other security issues regarding North Korea," a ministry statement said. In Washington, the State Department said it was following developments closely. "Again, we urge North Korea not to restart any of its frozen nuclear facilities," said Tara Rigler, a department spokeswoman. Ms. Rigler said the State Department's stance was unchanged since Monday, when the department's spokesman, Philip Reeker, said that there could be no negotiations while North Korea is pursuing its nuclear program, and that the United States "will not give in to blackmail." President Bush was said to be monitoring developments from the presidential retreat at Camp David, Md., where he is spending the Christmas holiday with his family.

Ms. Rigler reiterated the administration's position that the spent fuel rods are "of particular concern because they could be processed to recover plutonium for nuclear weapons." "They have no relevance for the generation of electricity," she said. Recently, China, which has been North Korea's closest ally since the two countries fought the

United States during the Korean War from 1950 to 1953, also expressed concern over the reported pursuit of nuclear weapons. Today, Beijing urged Washington and Pyongyang to negotiate a solution of the crisis that would leave the Korean peninsula free from nuclear weapons. "We hope relevant sides can proceed in the overall interest of safeguarding peace and stability on the peninsula and reach a resolution to the issue through dialogue," the Chinese Foreign Ministry said in a statement.

AIR FORCE DECOMMISSIONS LAST MISSILE WARNING GROUND STATION, Space & Missile, December 26, 2002. The Air Force recently decommissioned the last of four legacy ground centers that had been used to process data from Earth orbiting Defense Support Program (DSP) satellites. A new Mission Control Station (MCS) at Buckley Air Force Base in Aurora, Colo., began serving as the primary missile-warning site in December 2001. An interim mission control station backup is also ready for service in an emergency. The consolidation is projected to save the Air Force $18 million per year, according to defense contractor Lockheed Martin. The move signals full confidence in the missile warning capabilities of the future Space-Based Infrared System (SBIRS) consolidated ground architecture, also known as SBIRS Increment one. A Lockheed Martin/Northrop Grumman team developed the SBIRS Increment one architecture, which includes the new MCS, the interim backup, and remote ground stations overseas. Key features include more accurate characterization of missile launch events, improved user interfaces, and consolidated satellite constellation management. An integrated training suite for crew training and certification is under development and a permanent backup MCS at Schriever Air Force Base, Colorado Springs, Colo., is planned. The second level of the SBIRS High program, Increment two, will build on the Increment one foundation and add new satellites and sensors to ultimately replace the DSP constellation. Increment two performance, with more timely and accurate launch reports, will enhance support to missile surveillance, missile defense, technical intelligence, and battlespace characterization.

SBIRS HIGH TEAM VALIDATES SYSTEM'S SOFTWARE COMMUNICATION COMPATIBILITY, Defense Daily, December 19, 2002. The Lockheed Martin-Northrop Grumman team developing Space Based Infrared System High (SBIRS High) in a test this month demonstrated the compatibility of the space and ground component software to communicate, industry officials said. During a Dec. 2 test, the team conducted a space to ground compatibility test that showed the highly elliptical orbit (HEO) payload flight software and ground software could communicate through ground interfaces, an industry official said. This test marked the first time the ground control segment interacted with a HEO payload qualification unit, the official said. That qualification unit is comprised essentially of all the elements that will be included in the actual flight payload, the official noted. Mostly simulations have been used for such scenarios in previous tests. Further, the test verified that the test configuration, the databases and software all worked, the official said. Those

components are critical for the success of sending and receiving the tracking, telemetry and commanding signals, the official noted…SBIRS High is planned to replace Defense Support Program satellites, which were built by Northrop Grumman.

INDO-U.S. TALKS ON MISSILE DEFENCE TO BE HELD ON JANUARY 15-16, Asia Pulse, December 27, 2002. Proliferation of missile systems in many countries, including North Korea, will figure in the first talks on missile defense between Indian and U.S. officials in Washington on January 15 and 16. The Indian delegation will be led by Sheelkant Sharma, a Joint Secretary in the External Affairs Ministry. The Indo-U.S. missile defense talks are reportedly part of a series planned in the capitals of the two countries. The officials are expected to discuss East Asia in February when the Indian delegation will be headed by Nalin Surie of the East Asia division of the External Affairs Ministry.

RAYTHEON, NORTHROP GRUMMAN FINALIZE $200 MILLION DEAL FOR STSS PAYLOAD, Defense Daily, December 19, 2002. Raytheon reported [Dec. 18] it is preparing to provide the primary sensor payload for the Space Tracking and Surveillance System (STSS) under a $200 million contract to the program prime contractor Northrop Grumman. The STSS program formerly was called the Space Based Infrared System Low (SBIRS Low) program by the Air Force and Missile Defense Agency (MDA). Northrop Grumman has awarded Raytheon a $200 million contract for delivery of the sensor payloads…The first cycle of the program that focuses on launch of the first two satellites in the 2006-07 time frame. For several months work has been progressing on the first two satellites. Those vehicles are planned to be launched with two sensors, an acquisition and a track sensor…Raytheon, in a statement [Dec. 18], explained the latest contract with Northrop Grumman defines the efforts associated with STSS development to provide the initial space and ground segment assets. "Our acquisition and tracking sensors will demonstrate the value of space-based IR for midcourse discrimination and counter-counter measure challenges. Our STSS payload enables a layered defense against ballistic missile threats," [said Stephen Nordel, Raytheon's program executive for STSS.]

U.S. NAVY SEES THE 'LIGHT,' Jane's Defence Weekly, December 18, 2002. High-powered lasers that knock cruise missiles and aircraft out of the sky, precision-guided projectiles that emerge from the exoatmosphere at a speed of M5.0, striking their targets with such force that explosive warheads are not required. These are some of the advanced technologies senior U.S. Navy (USN) officials believe will equip future warships. These capabilities, listed in the navy's new 'Sea Power 21' roadmap, are within technical reach this decade, Rear Adm. Michael Mathis, commander of the Naval Surface Warfare Center, told *Jane's Defence Weekly*…The navy estimates it will eventually need a megawatt laser and plans to work in stages toward that capability…Funding permitting, the navy hopes to demonstrate a full-power Free

Electron Laser (FEL) at sea in eight to 10 years…The navy prefers to develop a FEL because it is more efficient in power transference and it can operate in maritime environments, explained Cdr Roger McGinnis, the service's program manager for directed energy. Chemical lasers - such as those the army is developing for the Tactical High-Energy Laser program - use highly toxic chemicals and effluents dangerous for naval personnel. Moreover, Cmdr. McGinnis said, chemical lasers operate at wavelengths that do not propagate well through a wet maritime atmosphere. Solid-state lasers, Adm. Mathis said, are less efficient than FELs, so "you have a lot of waste heat that ends up residing in the lasing medium that you cannot get ride of." That excess heat causes a problem for ships when the laser is operated at high power.

ANALYSIS

BIG PROJECTS PUT ON HOLD IN 2002, Alaska Journal of Commerce (Online), December 23, 2002. A year ago, a typical wish list to Santa from Alaska's business community probably included a national missile defense system, a natural gas pipeline to the Lower 48 and the opening of the Arctic National Wildlife Refuge to oil exploration. In 2002, Santa provided one out of three: The missile system, which included about $250 million worth of work this year at Shemya Island in the Aleutians and at Fort Greely near Delta. Shemya is where the big radar system to track incoming missiles is being built; Greely is where a handful of interceptor missiles will initially be deployed. The project is now slated to get even bigger with a deployment decision by President Bush announced Dec. 17. *Ed Bennett, Journal Managing Editor.*