# 1AC

## 1AC – USC Quarters

### 1AC – Heg Advantage

#### CONTENTION 1: HEG

**Cyber-attack is coming---actors are probing grid weaknesses**

**Reed 12** John, Reports on the frontiers of cyber war and the latest in military technology for Killer Apps at Foreign Policy, "U.S. energy companies victims of potentially destructive cyber intrusions", 10/11, killerapps.foreignpolicy.com/posts/2012/10/11/us\_energy\_companies\_victims\_of\_potentially\_destructive\_cyber\_attacks

Foreign actors are probing the networks of key American companies in an attempt to gain control of industrial facilities and transportation systems, Defense Secretary Leon Panetta revealed tonight.¶ "We know that foreign **cyber actors are probing America's critical infrastructure networks**," said Panetta, disclosing previously classified information during a speech in New York laying out the Pentagon's role in protecting the U.S. from cyber attacks. "They are targeting the computer control systems that operate chemical, **electricity** and water plants, and those that guide transportation thorough the country."¶ He went on to say that the U.S. government knows of "specific instances where intruders have gained access" to these systems -- frequently known as Supervisory Control and Data Acquisition (or SCADA) systems -- and that "they are seeking to create advanced tools to attack these systems and cause panic, destruction and even the loss of life," according to an advance copy of his prepared remarks.¶ The secretary said that **a coordinated attack on enough critical infrastructure could be a "cyber Pearl Harbor" that would "cause physical destruction and loss of life, paralyze and shock the nation, and create a profound new sense of vulnerability.**"¶ While there have been reports of criminals using 'spear phishing' email attacks aimed at stealing information about American utilties, Panetta's remarks seemed to suggest more sophisticated, nation-state backed attempts to actually gain control of and damage power-generating equipment. ¶ Panetta's comments regarding the penetration of American utilities echo those of a private sector cyber security expert Killer Apps spoke with last week **who said that the networks of American electric companies were penetrated, perhaps in preparation for a Stuxnet-style attack**.¶ Stuxnet is the famous cyber weapon that infected Iran's uranium-enrichment centrifuges in 2009 and 2010. Stuxnet is believed to have caused some of the machines to spin erratically, thereby destroying them.¶ "**There is hard evidence** that there has been penetration of our power companies, and given Stuxnet, that is a staging step before destruction" of electricity-generating equipment, the expert told Killer Apps. Because uranium centrifuges and power turbines are both spinning machines, "**the attack is identical -- the one to take out the centrifuges and the one to take out our power systems is the same attack**."¶ "If a centrifuge running at the wrong speed can blow apart" so can a power generator, said the expert. "If you do, in fact, spin them at the wrong speeds, you can blow up any rotating device."¶ Cyber security expert Eugene Kaspersky said two weeks ago that one of his greatest fears is someone reverse-engineering a sophisticated cyber weapon like Stuxnet **-- a relatively easy task** -- and he noted that Stuxnet itself passed through power plants on its way to Iran. "Stuxnet infected thousands of computer systems all around the globe, I know there were power plants infected by Stuxnet very far away from Iran," Kaspersky said.

**Grid attacks take out C and C---causes retaliation and nuclear war**

**Tilford 12** Robert, Graduate US Army Airborne School, Ft. Benning, Georgia, “Cyber attackers could shut down the electric grid for the entire east coast” 2012, <http://www.examiner.com/article/cyber-attackers-could-easily-shut-down-the-electric-grid-for-the-entire-east-coa>

To make matters worse a cyber attack that can take out a civilian power grid, for example could also cripple the U.S. military.¶ The senator notes that is that the same power grids that supply cities and towns, stores and gas stations, cell towers and heart monitors also power “every military base in our country.”¶ “Although bases would be prepared to weather a short power outage with backup diesel generators, within hours, not days, fuel supplies would run out”, he said.¶ Which means military **command and control centers could go dark**.¶ Radar systems that detect air threats to our country **would shut Down completely**.¶ “Communication between commanders and their troops would also go silent. And many weapons systems would be left without either fuel or electric power”, said Senator Grassley.¶ “So in a few short hours or days, the mightiest military in the world would be left scrambling to maintain base functions”, he said.¶ We contacted the Pentagon and officials confirmed the threat of a cyber attack is something very real.¶ Top national security officials—including the Chairman of the Joint Chiefs, the Director of the National Security Agency, the Secretary of Defense, and the CIA Director— have said, “preventing a cyber attack and improving the nation’s electric grids is among the most urgent priorities of our country” (source: Congressional Record).¶ So how serious is the Pentagon taking all this?¶ Enough to start, or end a war over it, for sure (see video: Pentagon declares war on cyber attacks http://www.youtube.com/watch?v=\_kVQrp\_D0kY&feature=relmfu ).¶ A cyber attack today against the US could very well be seen as an “Act of War” and could be met with a “full scale” US military response.¶ That could include the use **of “nuclear weapons**”, if authorized by the President.

**Plan solves grid collapse---SMRs make bases resilient and deters attack**

**Andres and Breetz 11** Richard B, Professor of National Security Strategy at the National War College and a Senior Fellow and Energy and Environmental Security and Policy Chair in the Center for Strategic Research, Institute for National Strategic Studies, at the National Defense University and Hanna L, doctoral candidate in the Department of Political Science at The Massachusetts Institute of Technology, February, "Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications", www.ndu.edu/press/lib/pdf/StrForum/SF-262.pdf

Small Reactors and Energy Security¶ The DOD interest in small reactors derives largely from problems with base and logistics vulnerability. Over the last few years, the Services have begun to reexamine virtually every aspect of how they generate and use energy with an eye toward cutting costs, decreasing carbon emissions, and reducing energy-related vulnerabilities. These actions have resulted in programs that have significantly reduced DOD energy consumption and greenhouse gas emissions at domestic bases. Despite strong efforts, however, two critical security issues have thus far **proven resistant to existing solutions**: bases’ vulnerability to civilian power outages, and the need to transport large quantities of fuel via convoys through hostile territory to forward locations. Each of these is explored below.¶ Grid Vulnerability. DOD is unable to provide its bases with electricity when the civilian electrical grid is offline for an extended period of time. **Currently, domestic military installations receive 99 percent of their electricity from the civilian power grid.** As explained in a recent study from the Defense Science Board:¶ DOD’s key problem with electricity is that critical missions, such as national strategic awareness and national command authorities, are almost entirely dependent on the national transmission grid . . . [**which] is fragile, vulnerable, near its capacity limit, and outside of DOD control**. In most cases, neither the grid nor on-base backup power provides sufficient reliability to ensure continuity of critical national priority functions and oversight of strategic missions in the face of a long term (several months) outage.7¶ The grid’s fragility was demonstrated during the 2003 Northeast blackout in which 50 million people in the United States and Canada lost power, some for up to a week, when one Ohio utility failed to properly trim trees. The blackout created cascading disruptions in sewage systems, gas station pumping, cellular communications, border check systems, and so forth, and demonstrated the interdependence of modern infrastructural systems.8¶ More recently, awareness has been growing that the grid is also vulnerable to purposive attacks. A report sponsored by the Department of Homeland Security suggests that a coordinated cyberattack on the grid could result in a third of the country losing power for a period of weeks or months.9 Cyberattacks on critical infrastructure are not well understood. It is not clear, for instance, whether existing terrorist groups might be able to develop the capability to conduct this type of attack. It is likely, however, that some nation-states either have or are working on developing the ability to take down the U.S. grid. In the event of a war with one of these states, it is possible, if not likely, that parts of the civilian grid would cease to function, taking with them military bases located in affected regions.¶ **Government and private organizations are currently working to secure the grid against attacks; however, it is not clear that they will be successful**. Most military bases currently have backup power that allows them to function for a period of hours or, at most, a few days on their own. **If power were not restored after this amount of time, the results could be disastrous**. First, military assets taken offline by the crisis would not be available to help with disaster relief. Second, during an extended blackout, **global military operations could be seriously compromised**; this disruption would be particularly serious if the blackout was induced during major combat operations. During the Cold War, this type of event was far less likely because the United States and Soviet Union shared the common understanding that blinding an opponent with **a grid blackout could escalate to nuclear war**. America’s current opponents, however, may not share this fear or be deterred by this possibility.¶ In 2008, the Defense Science Board stressed that DOD should mitigate the electrical grid’s vulnerabilities by turning military installations into “islands” of energy self-sufficiency.10 The department has made efforts to do so by promoting efficiency programs that lower power consumption on bases and by constructing renewable power generation facilities on selected bases. Unfortunately, these programs will not come close to reaching the goal of islanding the vast majority of bases. **Even with massive investment in efficiency and renewables, most bases would not be able to function for more than a few days after the civilian grid went offline**.¶ **Unlike other alternative sources of energy, small reactors have the potential to solve DOD’s vulnerability to grid outages**. Most bases have relatively light power demands when compared to civilian towns or cities. Small reactors could easily support bases’ power demands separate from the civilian grid during crises. In some cases, the reactors could be designed to produce enough power not only to supply the base, but also to provide critical services in surrounding towns during long-term outages.¶ Strategically, islanding bases with small reactors has another benefit. One of the main reasons an enemy might be willing to risk reprisals by taking down the U.S. grid during a period of military hostilities would be to affect ongoing military operations. Without the lifeline of intelligence, communication, and logistics provided by U.S. domestic bases, American military operations would be compromised in almost any conceivable contingency**. Making bases more resilient to civilian power outages would reduce the incentive for an opponent to attack the grid**. An opponent might still attempt to take down the grid for the sake of disrupting civilian systems, but the powerful incentive to do so in order to win an ongoing battle or war would be greatly reduced.

**Grid failure wrecks US critical mission operations**

**Stockton 11** Paul, assistant secretary of defense for Homeland Defense and Americas’ Security Affairs, “Ten Years After 9/11: Challenges for the Decade to Come”, <http://www.hsaj.org/?fullarticle=7.2.11>

The cyber threat to the DIB is only part of a much larger challenge to DoD. Potential adversaries are seeking asymmetric means to cripple our force projection, warfighting, and sustainment capabilities, by targeting the critical civilian and defense supporting assets (within the United States and abroad) on which our forces depend. This challenge is not limited to man-made threats; DoD must also execute its mission-essential functions in the face of disruptions caused by naturally occurring hazards.20 Threats and hazards to DoD mission execution include incidents such as earthquakes, naturally occurring pandemics, solar weather events, and industrial accidents, as well as kinetic or virtual attacks by state or non-state actors. Threats can also emanate from insiders with ties to foreign counterintelligence organizations, homegrown terrorists, or individuals with a malicious agenda. From a DoD perspective, this global convergence of unprecedented threats and hazards, and vulnerabilities and consequences, is a particularly problematic reality of the post-Cold War world. Successfully deploying and sustaining our military forces are increasingly a function of interdependent supply chains and privately owned infrastructure within the United States and abroad, including transportation networks, cyber systems, commercial corridors, communications pathways, and energy grids. This infrastructure largely falls outside DoD direct control. Adversary actions to destroy, disrupt, or manipulate this highly vulnerable homeland- and foreign-based infrastructure may be relatively easy to achieve and extremely tough to counter. Attacking such “soft,” diffuse infrastructure systems could significantly affect our military forces globally – potentially blinding them, neutering their command and control, degrading their mobility, and isolating them from their principal sources of logistics support. The Defense Critical Infrastructure Program (DCIP) under Mission Assurance seeks to improve execution of DoD assigned missions to make them more resilient. This is accomplished through the assessment of the supporting commercial infrastructure relied upon by key nodes during execution. By building resilience into the system and ensuring this support is well maintained, DoD aims to ensure it can "take a punch as well as deliver one."21 It also provides the department the means to prioritize investments across all DoD components and assigned missions to the most critical issues faced by the department through the use of risk decision packages (RDP).22 The commercial power supply on which DoD depends exemplifies both the novel challenges we face and the great progress we are making with other federal agencies and the private sector. Today’s commercial electric power grid has a great deal of resilience against the sort of disruptive events that have traditionally been factored into the grid’s design. Yet, the grid will increasingly confront threats beyond that traditional design basis. This complex risk environment includes: disruptive or deliberate attacks, either physical or cyber in nature; severe natural hazards such as geomagnetic storms and natural disasters with cascading regional and national impacts (as in NLE 11); long supply chain lead times for key replacement electric power equipment; transition to automated control systems and other smart grid technologies without robust security; and more frequent interruptions in fuel supplies to electricity-generating plants. These risks are magnified by globalization, urbanization, and the highly interconnected nature of people, economies, information, and infrastructure systems. The department is highly dependent on commercial power grids and energy sources. As the largest consumer of energy in the United States, DoD is dependent on commercial electricity sources outside its ownership and control for secure, uninterrupted power to support critical missions. In fact, approximately 99 percent of the electricity consumed by DoD facilities originates offsite, while approximately 85 percent of critical electricity infrastructure itself is commercially owned. This situation only underscores the importance of our partnership with DHS and its work to protect the nation’s critical infrastructure – a mission that serves not only the national defense but also the larger national purpose of sustaining our economic health and competitiveness. DoD has traditionally assumed that the commercial grid will be subject only to infrequent, weather-related, and short-term disruptions, and that available backup power is sufficient to meet critical mission needs. As noted in the February 2008 Report of the Defense Science Board Task Force on DoD Energy Strategy, “In most cases, neither the grid nor on-base backup power provides sufficient reliability to ensure continuity of critical national priority functions and oversight of strategic missions in the face of a long term (several months) outage.”23 Similarly, a 2009 GAO Report on Actions Needed to Improve the Identification and Management of Electrical Power Risks and Vulnerabilities to DoD Critical Assets stated that DoD mission-critical assets rely primarily on commercial electric power and are vulnerable to disruptions in electric power supplies.24 Moreover, these vulnerabilities may cascade into other critical infrastructure that uses the grid – communications, water, transportation, and pipelines – that, in turn, is needed for the normal operation of the grid, as well as its quick recovery in emergency situations. To remedy this situation, the Defense Science Board (DSB) Task Force recommended that DoD take a broad-based approach, including a focused analysis of critical functions and supporting assets, a more realistic assessment of electricity outage cause and duration, and an integrated approach to risk management that includes greater efficiency, renewable resources, distributed generation, and increased reliability. DoD Mission Assurance is designed to carry forward the DSB recommendations. Yet, for a variety of reasons – technical, financial, regulatory, and legal – DoD has limited ability to manage electrical power demand and supply on its installations. As noted above, DHS is the lead agency for critical infrastructure protection by law and pursuant to Homeland Security Presidential Directive 7. The Department of Energy (DOE) is the lead agency on energy matters. And within DoD, energy and energy security roles and responsibilities are distributed and shared, with different entities managing security against physical, nuclear, and cyber threats; cost and regulatory compliance; and the response to natural disasters. And of course, production and delivery of electric power to most DoD installations are controlled by commercial entities that are regulated by state and local utility commissions. The resulting paradox: DoD is dependent on a commercial power system over which it does not – and never will – exercise control.

**Loss of mission effectiveness causes nuclear war in every hotspot**

**Kagan and O’Hanlon 7** Frederick, resident scholar at AEI and Michael, senior fellow in foreign policy at Brookings, “The Case for Larger Ground Forces”, April 2007, http://www.aei.org/files/2007/04/24/20070424\_Kagan20070424.pdf

We live at a time when wars not only rage in nearly every region but threaten to erupt in many places where the current relative calm is tenuous. To view this as a strategic military challenge for the United States is not to espouse a specific theory of America’s role in the world or a certain political philosophy. Such an assessment flows directly from the basic bipartisan view of American foreign policy makers since World War II that overseas threats must be countered before they can directly threaten this country’s shores, that the basic stability of the international system is essential to American peace and prosperity, and that no country besides the United States is in a position to lead the way in countering major challenges to the global order. Let us highlight the threats and their consequences with a few concrete examples, emphasizing those that involve key strategic regions of the world such as the Persian Gulf and East Asia, or key potential threats to American security, such as the spread of nuclear weapons and the strengthening of the global Al Qaeda/jihadist movement. The Iranian government has rejected a series of international demands to halt its efforts at enriching uranium and submit to international inspections. What will happen if the US—or Israeli—government becomes convinced that Tehran is on the verge of fielding a nuclear weapon? North Korea, of course, has already done so, and the ripple effects are beginning to spread. Japan’s recent election to supreme power of a leader who has promised to rewrite that country’s constitution to support increased armed forces—and, possibly, even nuclear weapons— may well alter the delicate balance of fear in Northeast Asia fundamentally and rapidly. Also, in the background, at least for now, Sino Taiwanese tensions continue to flare, as do tensions between India and Pakistan, Pakistan and Afghanistan, Venezuela and the United States, and so on. Meanwhile, the world’s nonintervention in Darfur troubles consciences from Europe to America’s Bible Belt to its bastions of liberalism, yet with no serious international forces on offer, the bloodletting will probably, tragically, continue unabated. And as bad as things are in Iraq today, they could get worse. What would happen if the key Shiite figure, Ali al Sistani, were to die? If another major attack on the scale of the Golden Mosque bombing hit either side (or, perhaps, both sides at the same time)? Such deterioration might convince many Americans that the war there truly was lost—but the costs of reaching such a conclusion would be enormous. Afghanistan is somewhat more stable for the moment, although a major Taliban offensive appears to be in the offing. Sound US grand strategy must proceed from the recognition that, over the next few years and decades, the world is going to be a very unsettled and quite dangerous place, with Al Qaeda and its associated groups as a subset of a much larger set of worries. The only serious response to this international environment is to develop armed forces capable of protecting America’s vital interests throughout this dangerous time**. Doing so requires a military capable of a wide range of missions**—including not only deterrence of great power conflict in dealing with potential hotspots in Korea, the Taiwan Strait, and the Persian Gulf but also associated with a variety of Special Forces activities and stabilization operations. For today’s US military, which already excels at high technology and is increasingly focused on re-learning the lost art of counterinsurgency, this is first and foremost a question of finding the resources to field a large-enough standing Army and Marine Corps to handle personnel intensive missions such as the ones now under way in Iraq and Afghanistan. Let us hope there will be no such large-scale missions for a while. But preparing for the possibility, while doing whatever we can at this late hour to relieve the pressure on our soldiers and Marines in ongoing operations, is prudent. At worst, the only potential downside to a major program to strengthen the military is the possibility of spending a bit too much money. **Recent history shows no link between having a larger military and its overuse**; indeed, Ronald Reagan’s time in office was characterized by higher defense budgets and yet much less use of the military, an outcome for which we can hope in the coming years, but hardly guarantee. While the authors disagree between ourselves about proper increases in the size and cost of the military (with O’Hanlon preferring to hold defense to roughly 4 percent of GDP and seeing ground forces increase by a total of perhaps 100,000, and Kagan willing to devote at least 5 percent of GDP to defense as in the Reagan years and increase the Army by at least 250,000), we agree on the need to start expanding ground force capabilities by at least 25,000 a year immediately. Such a measure is not only prudent, it is also badly overdue.

**Hegemony prevents extinction**

**Barnett 11** (Thomas P.M., Former Senior Strategic Researcher and Professor in the Warfare Analysis & Research Department, Center for Naval Warfare Studies, U.S. Naval War College American military geostrategist and Chief Analyst at Wikistrat., worked as the Assistant for Strategic Futures in the Office of Force Transformation in the Department of Defense, “The New Rules: Leadership Fatigue Puts U.S., and Globalization, at Crossroads,” March 7 <http://www.worldpoliticsreview.com/articles/8099/the-new-rules-leadership-fatigue-puts-u-s-and-globalization-at-crossroads>)

Events in Libya are a further reminder for Americans that we **stand at a crossroads in our continuing evolution as the world's sole full-service superpower**. Unfortunately, we are increasingly seeking change without cost, and shirking from risk because we are tired of the responsibility. We don't know who we are anymore, and our president is a big part of that problem. Instead of leading us, he explains to us. Barack Obama would have us believe that he is practicing strategic patience. But many experts and ordinary citizens alike have concluded that he is actually beset by strategic incoherence -- in effect, a man overmatched by the job. It is worth first examining the larger picture: We live in a time of arguably **the greatest structural change in the global order yet endured**, with this historical moment's most amazing feature being its relative and absolute **lack of mass violence**. That is something to consider when Americans contemplate military intervention in Libya, because if we do take the step to prevent larger-scale killing by engaging in some killing of our own, we will not be adding to some fantastically imagined global death count stemming from the ongoing "megalomania" and "evil" of American "empire." We'll be engaging in the same sort of system-administering activity that has marked our stunningly successful stewardship of global order since World War II. Let me be more blunt: As the **guardian of globalization**, the U.S. military has been the **greatest force for peace the world has ever known**. Had America been removed from the global dynamics that governed the 20th century, the **mass murder never would have ended**. Indeed, it's entirely conceivable **there would now be no identifiable human civilization left, once nuclear weapons entered the killing equation.**  But the world did not keep sliding down that **path of perpetual war**. Instead, America stepped up and changed everything by **ushering in our now-perpetual great-power peace**. We introduced the **international liberal trade order known as globalization** and played loyal Leviathan over its spread. What resulted was the collapse of empires, **an explosion of democracy**, the **persistent spread of human rights**, the liberation of women, **the doubling of life expectancy**, a roughly **10-fold increase in adjusted global GDP** and a **profound and persistent reduction in** battle deaths from **state-based conflicts.** That is what American "hubris" actually delivered. Please remember that the next time some TV pundit sells you the image of "unbridled" American military power as the cause of global disorder instead of its cure. With self-deprecation bordering on self-loathing, we now imagine a post-American world that is anything but. Just watch who scatters and who steps up as the Facebook revolutions erupt across the Arab world. While we might imagine ourselves the status quo power, we remain the world's most vigorously revisionist force. As for the sheer "evil" that is our military-industrial complex, again, let's examine what the world looked like before that establishment reared its ugly head. The last great period of global structural change was the first half of the 20th century, a period that saw a death toll of about 100 million across two world wars. That comes to an average of 2 million deaths a year in a world of approximately 2 billion souls. Today, with far more comprehensive worldwide reporting, researchers report an average of less than 100,000 battle deaths annually in a world fast approaching 7 billion people. Though admittedly crude, these calculations suggest a 90 percent absolute drop and a 99 percent relative drop in deaths due to war. We are clearly headed for a world order characterized by multipolarity, something the American-birthed system was designed to both encourage and accommodate. But given how things turned out the last time we collectively faced such a fluid structure, we would do well to keep U.S. power, in all of its forms, deeply embedded in the geometry to come. To continue the historical survey, after salvaging Western Europe from its half-century of civil war, the U.S. emerged as the progenitor of a new, far more just form of globalization -- one based on actual free trade rather than colonialism. America then successfully replicated globalization further in East Asia over the second half of the 20th century, setting the stage for the Pacific Century now unfolding.

### 1AC – Space Advantage

#### CONTENTION 2: SPACE

#### North Korea missile threat high---they will attempt reunification by force---increased capabilities are key

Yi 1-2 – Dr. Xiaoxiong Yi is the director of Marietta College’s China Program. January 2nd, 2013, "North Korea nuclear and missile development a clear and present danger" [www.lancastereaglegazette.com/article/20130102/OPINION04/301020014/North-Korea-nuclear-missile-development-clear-present-danger?nclick\_check=1](http://www.lancastereaglegazette.com/article/20130102/OPINION04/301020014/North-Korea-nuclear-missile-development-clear-present-danger?nclick_check=1)

North Korea is going nuclear rapidly.¶ A year into his rule, Kim Jong-un, 30, the grandson of the Kim Dynasty, has not only written North Korea’s nuclear status into the country’s constitution, but also led the Hermit Kingdom one major step closer to a full-blown nuclear-armed state.¶ Since 1998, North Korea has already developed short- and medium-range missiles and stockpiled enough weapons-grade plutonium for half a dozen nuclear bombs. **Pyongyang’s successful launch of a long-range missile in December 2012 has turned a hypothetical nuclear power into an emerging reality**.¶ As Kim Jong-un was giving himself a nice year-end present to mark the first anniversary of his succession to power in the secretive country, **North Korea’s leap forward in mid-December clearly demonstrated that the up-and-coming “North Korea 3.0” is on a** credible path to further developing its intercontinental ballistic missile capabilities, capable of reaching the shores of Alaska and Hawaii**.**¶The South Korean government has issued an official warning that the North has developed rockets that can reach the U.S. mainland. “Based on our analysis and simulation,” South Korea Defense Ministry announced on Dec. 23, “the missile is capable of flying more than 10,000 kilometers (6,200 miles) with a warhead of 500-600 kilograms.”¶ But Kim Jong-un and his generals still seem unsatisfied with their recent missile launch success. Satellite photos indicate North Korea is already in a **“state of readiness” for its third nuclear test** at the Punggye-ri nuclear test facility.¶ Pyongyang conducted its first and second atomic explosions in 2006 and 2009. A third nuclear test would fit a pattern. “North Korea is thought to have enough plutonium for a handful of crude atomic bombs, and unveiled a uranium enrichment facility in 2010,” according to Hong Kong-based South China Morning Post, “but it must continue to conduct tests to master the miniaturization technology crucial for a true nuclear weapons program. Rocket and nuclear tests unnerve Washington and its allies because **each new success puts North Korean scientists another step closer to perfecting a nuclear warhead small enough to put on a missile that could hit the United States.**”¶ The three generations of Kims have been no strangers to nuclear brinkmanship, but Kim the grandson’s latest series of actions is qualitatively different. With North Korea’s long-range missile launch conducted on Dec. 12, and a simultaneous preparation for the third underground nuclear test, Kim Jong-un seems to be betting all his chips on getting the world’s recognition as a nuclear power and ultimately, a reunification of the Korean Peninsula by force and under his terms.¶ “Kim is fighting for a place in the nuclear club,” writes Shim Jae Hoon of New York Times, “and by doing so, will have the power to demand the withdrawal of American troops from the South. North Korea has not given up the ambition of reunifying the peninsula under its dominance, just as Vietnam was reunified under Hanoi’s control. Through repeated nuclear tests, the North seeks to make its nuclear weapons program a fait accompli.”¶ Kim Jong-un’s North Korea may be a friendless nation, but it certainly got the world’s attention last month when it sent its long-range missile into space.¶ A dictatorial and unpredictable regime is now preparing for another nuclear explosion for a true nuclear weapons program. What are the implications for the U.S. and its allies?¶ Since the Clinton administration, Washington has repeatedly stated the United States “will not tolerate nuclear weapons in North Korea.”¶ For the United States and its two key allies in Asia, Japan and South Korea, it will be a mistake to assume that they can continue to do business as usual with Pyongyang. “North Korea’s military provocations have revealed weaknesses of the U.S. and its alliance partners’ military readiness,” says Dr. Ryo Hinata-Yamaguchi at the Center for Strategic and International Studies in Washington.¶ “A more expansive strategy is needed to deter North Korea. The United States, Japan, and South Korea now must work together to show the North Koreans that playtime is over.”

#### North Korea will blackmail the US absent missile defense --- causes war

Peter Huessy 9, Senior Defense Consultant Associate at the National Defense University Foundation (NDUF) and President of GeoStrategic Analysis, “Missile Defense in the Age of Nuclear Proliferation”, inFocus, http://www.jewishpolicycenter.org/1527/missile-defense-nuclear-proliferation

The Iranians are developing missiles with ranges in excess of 2,400 kilometers, and are seeking to develop **an intercontinental missile capability**, which the United States Air Force predicts will be completed by 2015. Tehran also has successfully tested a two-stage rocket that placed a satellite in orbit. This is a common precursor to developing an ICBM (intercontinental ballistic missile) capability.

North Korea now lags behind Iran in domestic rocket capabilities. Its last test of a long-range rocket only successfully completed two stages. If the third stage were to work, Pyongyang could land a 300 to 500 kilogram warhead on the United States. And while the West might experience relief over these apparent failures, it should be noted that Iranian technicians have been identified at North Korean launch facilities, marking a **strong symbiotic relationship and the potential for technical cooperation**. The Russians and Chinese also assist both rocket programs.

In the case of Iran, current assessments indicate that the Mullahs are developing nuclear devices to fit onto its 2,000 to 2,400 kilometer range Shahab missiles. This is a development of the utmost significance. The Islamic Republic could **fit a small nuclear device onto a short or medium range missile**, and launch it from a freighter just 300 kilometers off the coast of North Carolina, for example. Indeed, as Investors Business Daily reports, "the Iranians have tested a sophisticated nuclear warhead design that lets them pack a nuclear warhead into a smaller package able to fit nicely on the Shahab-3 and other Iranian missiles."

Analysts are also concerned about the threat of an electro-magnetic pulse (EMP) attack. Such an attack would involve detonating a nuclear device 20 to 70 miles above a major metropolitan area. The blast would destroy every computer and electronic device within sight of the blast. This would destroy refrigerators, cars, phones, and more. It would, in effect, set the city back more than one hundred years, technologically speaking, and effectively destroy its economy. The ripple effect of just one EMP attack, both through economic and technological mayhem, could **cripple the rest of the country.**

The conventional wisdom is that Iran does not have the technology to launch an EMP attack on the U.S. However, the EMP Commission, chartered by Congress earlier this decade, judged that such an attack was very possible. Indeed, Iran tested a Scud-type missile off of a barge in the Caspian Sea in the mid 1990s. The Missile Defense Agency (MDA) also conducted a test off the coast of Hawaii in recent years to prove to a skeptical intelligence community that it could be done. Even as far back as 1998, the Commission on Ballistic Missile Threats to the United States concluded that an EMP type attack ranked among the more likely missile threats to the United States.

Defending Against the Threat

While the U.S. currently has the technological capability to protect our costal regions from shorter-range attacks, such as from a freighter, to do so would **require many more platforms**. Systems such as the Aegis, the THAAD, and Patriot have proven to be effective in this capacity. But our current inventory needs to be expanded, as sufficient deployments around the country would deprive other regions from protection. Enhancement of the long-range interceptors deployed in Alaska and California must also be part of any defense package that seeks to deal with this threat, since an EMP threat can come from Scuds or ICBMs. As such, the U.S. Congress and the Administration should accelerate the acquisition and deployment of additional missile defense systems, as part of a global and layered capability to protect the U.S. and its allies.

In the absence of such defenses, North Korea and Iran or even Russia and China, will find it easier to **blackmail, coerce, or bully the U.S. or its allies.** U.S. military power is not the reason we are being threatened by the likes of Pyongyang and Tehran. It is that their terrorist and hegemonic goals can **only succeed if American power is overcome**. As Jeffrey Kuhner, President of the Edmund Burke Institute, wrote in The Washington Times:

Moscow and Peking have not abandoned their rivalry with the West… they are part of an alliance that aims to curtail and undermine American power. They have provided… support to Stalinist North Korea… They have sold vital missile and nuclear technology to Iran's apocalyptic mullahs. The are constantly obstructing the global war against terror."

Responding to the Critics

It is remarkable that after nearly half a century, even as the threats have gathered, critics of missile defense continue to oppose its deployment. They are wedded to the ambiguous strategy of "engagement and negotiations" with our enemies, primarily because they view U.S. policies as the root of the problem—most prominently represented by our liberation of Afghanistan and Iraq. In their view, if the United States is coerced into "staying at home," all the better.

The consequences of such a policy are grave. With no missile defenses for the U.S. homeland, **we can be** blackmailed successfully in any confrontation **with a state that has long-range missiles in its possession**. For example, we might be powerless to confront North Korea if it chose to resort to aggression against South Korea.

How should the U.S. prepare for this scenario? Taking no precautions will almost certainly embolden an aggressive actor like North Korea. But, **a preemptive attack is also fraught with danger**. Such an attack could leave Los Angeles and Pyongyang in ashes.

The answer lies in the deployment of effective missile defenses in any theater. Effective missile defenses give the President and the Pentagon the ability to strike launch sites in North Korea, for example, without necessarily sparking a wider conflict. More to the point, such defenses could also **intercept North Korean rockets** against our forces in the South China Sea, the Sea of Japan, South Korea, and Japan, for example.

#### Goes nuclear --- causes extinction

Chol 11 Kim Myong Chol is author of a number of books and papers in Korean, Japanese and English on North Korea, including Kim Jong-il's Strategy for Reunification. He has a PhD from the Democratic People's Republic of Korea's Academy of Social Sciences "Dangerous games" Aug 20 www.atimes.com/atimes/Korea/MH20Dg01.html

The divided and heavily armed Korean Peninsula remains the most inflammable global flashpoint, with any conflict sparked there likely to become a full-blown thermonuclear war involving the world's fourth-most powerful nuclear weapons state and its most powerful.

Any incident in Korea by design, accident, or miscalculation could erupt into a devastating DPRK-US war, with the Metropolitan US serving as a main war theater.

Rodong Sinmun warned on August 16: "The Korean Peninsula is faced with the worst crisis ever. An all-out war can be triggered by any accident."

Recent incidents illustrate the real danger of miscalculation leading to a total shooting war, given the volatile situation on the Land of Morning Calm.

1. The most recent case in point is the August 10 shelling of North Korea by the South. Frightened South Korea marines on Yeonpyeong Island mistook three noises from a North Korean construction site across the narrow channel for artillery rounds, taking an hour to respond with three to five artillery rounds.

The episode serves as a potent reminder to the world that the slightest incident can lead to war. A reportedly malfunctioning firefinder counter-artillery radar system seems to partly account for the panicky South Korean reaction.

South Korean conservative newspaper the Joong Ang Daily reported August 17:

"A military source said that radar installed to detect hostile fire did not work last week when North Korea fired five shots toward the Northern Limit Line (NLL), the disputed maritime border, on Aug 10.

"'We must confirm the location of the source of the firing through the ARTHUR (Artillery Hunting Radar) and HALO (hostile artillery location) systems, but ARTHUR failed to operate, resulting in a failure to determine the source of the fire,' said the source."

BBC reported on November 25 last year the aggressive nature of troops on the South Korea-held five islands in North Korean waters.

"Seen in this sense, they (five islands including Yeonpyeong Island) could provide staging bases for flanking amphibious attacks into North Korea if South Korea ever takes the offensive."

2. An almost catastrophic incident took place at dawn on June 17 near Inchon. South Korean marines stationed on Gyodong Island near Inchon Airport fired rifles at a civilian South Korean jetliner Airbus A320 with 119 people aboard as it was descending to land, after mistaking it for a North Korean military aircraft.

The Asiana Airlines flight was carrying 119 people from the Chinese city of Chengdu.

About 600 civilian aircraft fly near the island every day, including those flying across the NLL, but they face a perennial risk of being misidentified as a hostile warplane.

It is nothing short of a miracle that the Airbus A320 was not hit and nobody harmed.

3. On March 26, 2010, the high-tech South Korean corvette Sokcho fired 130 rounds at flocks of birds, mistaking them for a hostile flying object. The innocent birds looked like a North Korean warplane just at a time when an alleged North Korean midget submarine had managed to escape with impunity after torpedoing the hapless Cheonan deep inside security-tight South Korean waters.

The South Korean military's habit of firing at the wrong target increases the risk of an incident running out of control.

CNN aired a story December 16, headlined: "General: South Korea Drill Could Cause Chain Reaction."

F/A-18 pilot-turned Marine Corp General James Cartwright told the press in the Pentagon, "What we worry about, obviously, is if that it [the drill] is misunderstood or if it's taken advantage of as an opportunity.

"If North Korea were to react to that in a negative way and fire back at those firing positions on the islands, that would start potentially a chain reaction of firing and counter-firing.

"What you don't want to have happen out of that is ... for us to lose control of the escalation. That's the concern."

Agence France-Presse on December 11 quoted former chief of US intelligence retired admiral Dennis Blair as saying that South Korea "will be taking military action against North Korea".

New Korean war differs from other wars

Obama and the Americans seem to be incapable of realizing that North Korea is the wrong enemy, much less that a new Korean War would be fundamentally different from all other wars including the two world wars.

Two things will distinguish a likely American Conflict or DPRK-US War from previous wars.

The first essential difference is that the US mainland will become the main theater of war for the first time since the US Civil War (1861-1865), giving the Americans an opportunity to know what it is like to have war fought on their own land, not on faraway soil.

The US previously prospered by waging aggressive wars on other countries. Thus far, the Americans could afford to feel safe and comfortable while watching TV footage of war scenes from Afghanistan, Iraq, Pakistan and Libya as if they were fires raging across the river.

The utmost collateral damage has been that some American veterans were killed or returned home as amputees, with post traumatic stress disorder, only to be left unemployed and homeless.

However, this will no longer be the case.

At long last, it is Americans' turn to have see their homeland ravaged.

An young North Korea in 1950-53 was unable to carry the war all the way across the Pacific Ocean to strike back, but the present-day North Korea stands out as a fortress nuclear weapons state that can withstand massive American ICBM (Intercontinental ballistic missile) attacks and launch direct retaliatory transpacific strikes on the Metropolitan USA.

The second essential difference is that the next war in Korea, that is, the American Conflict or the DPRK-USA War would be the first actual full-fledged nuclear, thermonuclear war that mankind has ever seen, in no way similar to the type of nuclear warfare described in science fiction novels or films.

North Korea is unique among the nuclear powers in two respects: One is that the Far Eastern country, founded by legendary peerless hero Kim Il-sung, is the first country to engage and badly maul the world's only superpower in three years of modern warfare when it was most powerful, after vanquishing Nazi Germany and Imperial Japan.

The other is that North Korea is fully ready to go the length of fighting [hu]mankind's first and last nuclear exchange with the US.

The DPRK led by two Kim Il-sungs - the ever-victorious iron-willed brilliant commander Kim Jong-il and his heir designate Kim Jong-eun - is different from Russia under Nikita Khrushchev which backed down in the 1962 Cuban missile crisis.

Khrushchev and his company never fought the Americans in war. As a rule, most countries are afraid to engage the Americans. As the case is with them, North Korea is the last to favor war with the Americans.

However, it is no exaggeration to say that the two North Korean leaders are just one click away from ordering a retaliatory nuclear strike on the US military forces in Guam, Hawaii and metropolitan centers on the US mainland.

On behalf of Supreme Leader Kim Jong-il, Kim Jong-eun will fire highly destructive weapons of like Americans have never heard of or imagined to evaporate the US.

The North Koreans are too proud of being descendents of the ancient civilizations of Koguryo 2,000 years ago and Dankun Korea 5,000 years ago, to leave the Land of morning Calm divided forever with the southern half under the control of the trigger-happy, predatory US. The North Koreans prefer to fight and die in honor rather than kowtow to the arrogant Americans.

At the expense of comforts of a better life, North Koreans have devoted more than half a century to preparing for nuclear war with the Americans. All available resources have been used to convert the whole country into a fortress, including arming the entire population and indigenously turning out all types of nuclear thermonuclear weapons, and developing long-range delivery capabilities and digital warfare assets.

An apocalyptic Day After Tommorow-like scenario will unfold throughout the US, with the skyscrapers of major cities consumed in a sea of thermonuclear conflagration. The nuclear exchange will begin with retaliatory North Korean ICBMs detonating hydrogen bombs in outer space far above the US mainland, leaving most of the country powerless.

New York, Washington, Chicago, San Francisco and major cities should be torched by ICBMs streaking from North Korea with scores of nuclear power stations exploding, each spewing as much radioactive fallout as 150-180 H-bombs.

#### Space laser solves

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Operations: Satellite-Based Laser Weapons24 — Space-based lasers may also¶ provide active defense over large areas, depending¶ on the wavelength of the energy propagated and¶ existing atmospheric conditions, including¶ weather.25 A space-based laser satellite constellation¶ would have the inherent advantages and disadvantages¶ conferred by orbital mechanics.¶ Operating in space allows the placement of satellites¶ far above the earth in vantage points that¶ provide line-of-sight access to large portions of¶ the earth’s surface, including **potentially denied¶ areas within a hostile state**. These vantage points¶ have obvious advantages for directed energy¶ weapons based in space just as they do for sensors.¶ However, this access is complicated by the¶ motion of satellites within their orbit versus the¶ motion of the earth. Only satellites in very high¶ (23,000 mile) geosynchronous (GEO) orbits¶ maintain their position relative to the earth’s surface.¶ But GEO orbits are not suitable for spacebased¶ lasers for a number of reasons, the most¶ obvious being that they put the laser at too great¶ a distance from potential targets. The best solution¶ for laser systems would be a constellation of¶ satellites to achieve the desired coverage at lower¶ orbits. The satellites would not linger over specific¶ portions of the globe but would orbit the¶ earth on predictable paths with “access” to different¶ surface locations. About a dozen satellites at¶ an altitude of around 1,200 – 1,500 km can provide¶ continuous coverage of most of the earth¶ (excluding polar regions).¶ Space-based lasers could engage targets, primarily¶ ballistic missiles, much earlier in their trajectories¶ than terrestrially based defenses. Ballistic missile¶ threats could be engaged shortly after they ascend¶ above the clouds during their vulnerable boost¶ phase, before they deploy decoys.¶ Active defense lasers could also potentially protect¶ high-value satellites from attack by nano- or microsatellites¶ operating in a kinetic collision or parasitic¶ mode. In the vacuum of space, potentially¶ short engagement ranges would likely keep such a¶ satellite self-defense system relatively lightweight.

#### Chinese ASAT attacks are coming and collapse military power---space capabilities are key to deter attack

Bill Gertz 10-16, Senior Editor of the Washington Free Beacon, which is a project of the 501(c)4 Center for American Freedom, the Beacon’s editor in chief is Matthew Continetti, former associate editor of The Weekly Standard, 10/16/12, “China to Shoot at High Frontier,” http://freebeacon.com/china-to-shoot-at-high-frontier/

Whether or not the test is successful, development of the new high-altitude DN-2 ASAT reveals that China’s military is planning for future high-orbit space warfare despite seeking international agreements banning weapons in space.

China’s January 2007 ASAT test drew protests from the United States and other spacefaring nations, who saw it as a major threat to satellites used for both military and civilian purposes. That test also produced tens of thousands of pieces of space debris which threaten satellites.

A second possibility is the DN-2 missile test will be fired against a target missile, as occurred in 2010 as part of a joint Chinese ASAT-missile defense test.

Pentagon spokesmen declined to comment on the DN-2 ASAT program.

Michael Pillsbury, a former Reagan administration defense policymaker, stated in a 2007 report to Congress that Chinese military writers advocated covert deployment of sophisticated anti-satellite weapons system like the kind now being developed by the People’s Liberation Army for use against the United States “in a surprise manner without warning.”

“Even a small scale anti-satellite attack in a crisis against 50 U.S. satellites—assuming a mix of targeted military reconnaissance, navigation satellites, and communication satellites—could have a catastrophic effect not only on U.S. military forces, but on the U.S. civilian economy,” said Pillsbury, currently with the Hudson Institute. Chinese military writings also have discussed attacks on GPS satellites that are located in high-earth orbit, he stated.

ASAT a top-secret program

China’s anti-satellite missile system is a key element of the communist state’s growing arsenal of asymmetric warfare weapons, and remains one of Beijing’s most closely guarded military secrets.

Defense officials have said that with as few as 24 ASAT missiles, China could severely weaken U.S. military operations by disrupting global communications and military logistics, as well as by limiting celestial navigation systems used by high-technology weapons. Such an attack also would severely degrade U.S. intelligence gathering efforts against global targets, a key strategic military advantage.

A U.S. official familiar with reports of the ASAT test said China’s delay in conducting the test until after the Nov. 6 election is a sign Beijing wants to help President Obama’s reelection campaign. “It implies they’d rather have him reelected,” said the official.

The Obama administration has adopted conciliatory policies toward China’s military buildup and its large-scale human rights abuses. Critics say the administration also failed to hold Beijing accountable for its unfair trade practices and currency manipulation.

The administration’s questionable policies were revealed by a 2009 State Department cable that quoted Secretary of State Hillary Clinton as saying, “How do you deal toughly with your banker?”—a reference to China’s potentially coercive leverage over the United States through its large holdings of U.S. debt securities.

Richard Fisher, a Chinese military affairs specialist, said little is known publicly of the DN-2 missile. However, the DN-2 may be China’s designation for an ASAT missile and kill vehicle combination mounted on launchers dubbed KT-2, or KT-2A. This ASAT weapon is based on DF-31 or DF-31A road-mobile intercontinental ballistic missiles, respectively.

“ASATs derived from the KT-2 and KT-2A space launch vehicles have the potential to reach high earth orbits used by many strategic U.S. surveillance, communication, and navigation satellites,” said Fisher, with the International Assessment and Strategy Center.

Fisher said in 2002, during a military show in China, the KT-2A was touted by Chinese officials as having a 2,000-kilogram payload that could reach high-earth orbits.

“Since its appearance a decade ago, the KT series of space launch vehicles presaged what we now know, that a key Chinese strategic goal has been to deny outer space as a sanctuary to support American military operations,” Fisher said.

A KT-1 microsatellite launcher was displayed at the Zhuhai air show in 2000, and “it was fairly obvious that this could become the basis for an ASAT, and it was used as the basis for the SC-19 ASAT demonstrated successfully in January 2007,” Fisher said.

Because China will not join a verifiable space control agreement, “Washington has little choice, if it is to continue to deter China militarily, but to build far greater redundancy, passive and active defenses for outer space,” he said.

China ASAT caused space debris

U.S. officials estimate that China’s 2007 ASAT test that destroyed an aging weather satellite in low-earth orbit now accounts for 45 percent of all space debris in low-earth orbit.

After a year of stonewalling by China on the test, an official U.S. demarche, or protest note, was sent to Beijing in January 2008. According to a copy of the note made public by Wikileaks, the protest warned the Chinese government, “Any purposeful interference with U.S. space systems will be interpreted by the United States as an infringement of its rights and considered an escalation in a crisis or conflict.”

“The United States reserves the right, consistent with the [United Nations] Charter and international law, to defend and protect its space systems with a wide range of options, from diplomatic to military,” stated the protest, made by then-U.S. Ambassador to China Clark Randt.

A joint State Department-Pentagon report to Congress on export controls made public in April states that China is “developing space-based methods to counter ballistic missile defenses of the United States and our allies, including anti-satellite (ASAT) weapons.”

“As China advances in operational space capabilities, it is actively focusing on how to destroy, disrupt, or deny U.S. access to our own space assets,” the report said.

China is developing and refining its ASAT weapons as part of a “multi-dimensional program to limit or prevent the use of space-based assets by potential adversaries during times of conflict,” the report said.

“In addition to the direct-ascent [missile] ASAT program, China is developing other technologies and concepts for kinetic and directed energy for ASAT missions,” including electronic jamming of satellite communications and lasers that disrupt satellites, the report said.

ASAT weapons “have significant implications for anti-access/area-denial efforts against the United States in Taiwan Strait contingencies,” the report said. Those weapons and capabilities are being developed by China as a means to force the U.S. military out of Asian waters and territory and make it more difficult for U.S. forces to get into the region during a conflict, such as a defense of Taiwan. Other anti-access area denial weapons include anti-ship ballistic missiles, cyber warfare capabilities, and submarines.

Defense Intelligence Agency director Lt. Gen. Ronald L. Burgess told Congress in February that “China successfully tested a direct ascent anti-satellite weapon (ASAT) missile and is developing jammers and directed-energy weapons for ASAT missions.”

Burgess said that as “a prerequisite for ASAT attacks, China’s ability to track and identify satellites is enhanced by technologies from China’s manned and lunar programs as well as technologies and methods developed to detect and track space debris.”

Another ASAT test by China will likely undermine the Obama administration’s controversial space arms control proposal, introduced in January. Many in the Pentagon oppose the International Code of Conduct for Outer Space Activities over concerns it would place limits on U.S. space capabilities.

U.S. lagging in counterspace

Despite China’s continuing development of space weapons, the administration has done no research or development into so-called counterspace weapons and other capabilities that could deter China from its ASAT and anti-satellite laser and jammer arms, according to military officials. The opposition is based on the administration’s preference for arms control negotiations and agreements as a major element of its U.S. national security policies, the officials said.

#### Causes China to invade Taiwan

Dr Graham Ong-Webb 11, 3-15, a Managing Editor with IHS Jane's & PhD from the Department of War Studies, King's College London, “How Far Will China's Navy Reach?”, http://www.isn.ethz.ch/isn/Current-Affairs/ISN-Insights/Detail?lng=en&id=127560&contextid734=127560&contextid735=127476&tabid=127476

Not only economic interests but also geopolitical ones are fueling China's naval prowess, particularly in the Taiwan Straits - the most likely naval flashpoint. Beijing's option to unify Taiwan with the mainland by military force if necessary is no longer fuelled by ideology but geopolitics. As a 2008 US government report correctly put it, Taiwan is regarded as the focal point from which China can 'break out' from its centuries-long containment along the Pacific littoral" and secure its immediate security environment within the Asia-Pacific region. This 'line of containment' is also known as the oft-mentioned "first-island chain" running south from the Japanese archipelago to the Philippines, which naturally denies the mainland from having unfettered access to the oceanic thoroughfare. **The possession of Taiwan would** permanently break China's geographical curse. As a result, the Taiwan Straits - as well as the South China Sea and the Yellow Sea - have become pressing geopolitical priorities **that drive China's expansive military planning and procurement**. Naval prowess - only one head of the hydra

Moreover, it must be said that China's growing 'naval power' is not only about an expanding fleet of ships and submarines. All militaries advancing towards greater sophistication seek to integrate their sea, air, land and space capabilities in order to **increase overall lethality, efficiency and effectiveness**. The Chinese Navy is but one head of the country's military hydra. In a larger sense, the Chinese Navy should be regarded as a placeholder for the sea, air, land, and space-related capabilities that **China will bring to bear against an adversary in the maritime realm of conflict.**

US strategic planners have been increasingly concerned with China's recent development and impending deployment of certain air, land, and space-related capabilities, which **affect Taiwan's ability to impede a Chinese naval advance** toward its shores and also the **US Navy's capacity to project its military power in the Straits**. Some of these developments include an aircraft carrier, anti-ship ballistic missiles, stealth fighter-aircraft and anti-satellite missiles.

In January, the Chinese media published a video of China's first aircraft carrier undergoing sea trials. The bid to field a Chinese aircraft carrier may look like an unwieldy proposition because of the indomitable presence of 11 US aircraft carrier groups policing the world's oceans. The Chinese carrier, which is an upgraded version of a partially-built vessel purchased from Ukraine in 1998, is generations behind American carrier technology. However, China's plan to field an aircraft carrier since the 1990s is not an arms-race-type rejoinder to the US. It is simply borne out of a pragmatic need to use carrier-based aviation to better protect China's surface fleet. The Chinese Navy has calculated that an aircraft carrier with 40 aircraft on board would generate a combat effectiveness of between 200 and 800 land-based fighters in air-support functions. A Chinese carrier, supported by a fleet of attack submarines, may allow the rest of the Chinese Navy to secure an area up to the 'second-island chain' stretching from the Aleutians to Papua New Guinea.

China's fledgling anti-ship missile capability threatens US aircraft carriers. In early January, the US Navy's intelligence director acknowledged that China's anti-ship ballistic missile, the DF-21D, had finally reached its initial operating capability, **leaving US carriers open to attack**. Previously, US observers were sceptical that Chinese engineers could master the complicated science of hitting a manoeuvrable target such as a moving aircraft carrier. With the impending deployment of the DF-21D, its immediate role would be to **deter the US Seventh Fleet from approaching the Taiwan Strait**. The key target would be the USS George Washington, the aircraft carrier assigned to this fleet which **carries the US Navy's best strike aircraft** capable of attacking Chinese sea, air and land targets and destroying vital Chinese radar systems. These carried-launched aircraft have a range of less than 1,000 kilometers. Therefore, the DF-21D, which shares a similar range, is intended to keep the aircraft belonging to the George Washington out of lethal range.

The US and Taiwanese airborn-early-warning aircraft that support their respective navies are also **not immune from attack**. It was reported in early January that the Chinese military successfully test flew their own indigenously-built fifth-generation stealth fighter aircraft known as the J-20 "Black Eagle", designed to creep up and destroy those aircraft that **would otherwise provide real-time intelligence and surveillance of a Chinese naval attack**. Until recently, US officials have played down China's ability to make advances on its J-20 program launched in the 1990s. In fact, the American defence community previously estimated that the J-20 would be operational only around 2020 when it is more likely to be ready in about three years from now.

Lastly, the Chinese military is very close to fielding an anti-satellite missile capability that stands to cripple the network of satellites that the US military depends upon to marshal and **coordinate its air, land and naval forces effectively**. Chinese military planners realize that the US military satellite and communications network is both its **greatest strength and greatest weakness.** While it makes the US military more effective and efficient, it is also reduced to fighting 'blind, deaf and dumb' without it. In January 2007, Beijing successfully destroyed one of its own weather satellites with a direct ascent anti-satellite missile, based on the same missile airframe used for the DF-21D, hence proving that it could obliterate US satellites in low earth orbit.

These developments bolster the Chinese military's confidence in **achieving what it views to be its national security imperatives.** Whether or not China does possess hegemonic aspirations, it is becoming clear that Beijing is removing **the shackles** that previously placed limits on its strategic reach. In particular, as a recent US Office of Naval Intelligence report has noted, the Chinese Navy has begun removing the geographical limits to its 'offshore defense' thinking. It appears to have been given the mandate to venture "as far as [its] capabilities will allow it to operate task forces out at sea with the requisite amount of support and security." The deployment of a Chinese naval convoy to the Gulf of Aden to protect the country's shipping from Somali pirates in early January is instructive. The question that should now be asked is **how much maritime security is really enough for Beijing**. The answer determines how far Beijing will ask its navy to go.

#### Goes nuclear

Glaser 11 Professor of Political Science and International Affairs – George Washington University, “Will China’s Rise Lead to War?” *Foreign Affairs* Vol. 9 Iss. 2, March/April

THE PROSPECTS for avoiding intense military competition and war may be good, but growth in China's power may nevertheless require some changes in U.S. foreign policy that Washington will find disagreeable--particularly regarding Taiwan. Although it lost control of Taiwan during the Chinese Civil War more than six decades ago, China still considers Taiwan to be part of its homeland, and unification remains a key political goal for Beijing. China has made clear that it will use force if Taiwan declares independence, and much of China's conventional military buildup has been dedicated to increasing its ability to coerce Taiwan and reducing the United States' ability to intervene. Because China places such high value on Taiwan and because the United States and China--whatever they might formally agree to--have such different attitudes regarding the legitimacy of the status quo, the issue poses special dangers and challenges for the U.S.-Chinese relationship, placing it in a different category than Japan or South Korea. A crisis over Taiwan could fairly easily escalate to nuclear war, because each step along the way might well seem rational to the actors involved. Current U.S. policy is designed to reduce the probability that Taiwan will declare independence and to make clear that the United States will not come to Taiwan's aid if it does. Nevertheless, the United States would find itself under pressure to protect Taiwan against any sort of attack, no matter how it originated. Given the different interests and perceptions of the various parties and the limited control Washington has over Taipei's behavior, a crisis could unfold in which the United States found itself following events rather than leading them. Such dangers have been around for decades, but ongoing improvements in China's military capabilities may make Beijing more willing to escalate a Taiwan crisis. In addition to its improved conventional capabilities, China is modernizing its nuclear forces to increase their ability to survive and retaliate following a large-scale U.S. attack. Standard deterrence theory holds that Washington's current ability to destroy most or all of China's nuclear force enhances its bargaining position. China's nuclear modernization might remove that check on Chinese action, leading Beijing to behave more boldly in future crises than it has in past ones. A U.S. attempt to preserve its ability to defend Taiwan, meanwhile, could fuel a conventional and nuclear arms race. Enhancements to U.S. offensive targeting capabilities and strategic ballistic missile defenses might be interpreted by China as a signal of malign U.S. motives, leading to further Chinese military efforts and a general poisoning of U.S.-Chinese relations.

Lack of US response to Chinese space mil collapses Asian deterrence

RICHARD D. FISHER 10, JR. 1-20, senior fellow at the International Assessment and Strategy Center, “China's Scary Space Ambitions”, WSJ, http://online.wsj.com/article/SB10001424052748704320104575014341463615862.html?mod=WSJ\_Opinion\_LEFTTopBucket

China's Jan. 11 test of exoatmospheric missile interception is worth paying attention to—especially in Washington. It isn't just an early step toward development of a missile-defense system; it's also a signal of a radical change in the country's stance on the **militarization of space.** The United States should take this as a wake-up call that in the long term, China intends to **challenge its strategic superiority in aerospace.**

The People's Liberation Army publicly unveiled its new strategy as part of the Air Force's 60th anniversary in November last year. It appears that this strategy was formulated in 2004, but the world did not learn about it until PLA Air Force Commander General Xu Qiliang summarized it as "effecting air and space integration, possessing capabilities for both offensive and defensive operations."

Meanwhile, Chinese diplomats continued to hew to the line set down in 1985 by the late leader Deng Xiaoping, when he told former U.S. President Richard Nixon that China "is against whoever goes in for development of outer space weapons." China started an intensive diplomatic and propaganda campaign against American missile defense programs. Most recently Beijing added its vocal assistance to Vladimir Putin's intimidation campaign, which succeeded in helping to convince current U.S. President Barack Obama to reverse his predecessor's commitment to build ground-based defenses in Europe against Iran's Chinese-aided nuclear missile threat.

Today, China is beginning to shed the cloak of deception over its own missile-defense efforts, and has all but declared its intention to build an **aerospace power to rival that of the U.S.** After General Xu's statements, Chinese media commentaries explained that the new aerospace strategy emerged from Communist Party leader and PLA commander Hu Jintao's December 2004 call for the PLA to implement new "historic missions," which include **defending China's international interests**. The PLA Air Force in particular will shift from being a "campaign air force" for theater-level wars (such as against Taiwan) in cooperation with the Army, Navy and Second Artillery missile force, to a "strategic air force" increasingly capable of independent action farther from home.

Of particular importance is the PLA's willingness to publicly justify a space combat mission. While it is not yet clear which service will lead this mission, the PLA Air Force is the most vocal booster. In an Oct. 31 interview, General Xu stated that "competition among armed forces is moving toward the space-air domain and is extending from the aviation domain to near space and even deep space . . . having control of space and air means having **control of the ground, the seas and oceans**, and the electromagnetic space, which also means having the strategic initiative in one's hands . . ." General Xu's candor forced the Foreign Ministry to inveigh the following month: "We oppose the weaponization of outer space or a space arms race . . ." But even some Chinese scoff at this self-serving propaganda. Also in November, a Chinese military expert stated that as long as "hegemonism" (code for the U.S.) maintains primacy in space, "air-and-space **non-militarization is merely people's naive illusion**, or just a slogan and banner."

This isn't the first warning to Washington. In 2006, the PLA used ground-based lasers to "dazzle" a U.S. satellite, and in January 2007 demonstrated a ground-launched satellite interception. Last November, Chinese experts noted that the PLA may develop "assassin" satellites and "laser-armed" satellites, and reported China may already be developing an "orbital bomber." The PLA may also consider placing military assets on the moon—the first "Chang'e Three" moon lander may be equipped with a small radar and laser range-finder for "scientific" missions. The strict military-civilian "dual use" policy governing China's space program may mean that future larger unmanned Moon bases could be used to locate and target U.S. deep-space satellites that **provide warning of missile strikes.**

It's already public knowledge that China is now developing or deploying four new nuclear-armed intercontinental land-mobile and sea-based nuclear missiles. The key variable is whether the PLA will equip these missiles with multiple warheads, as some Asia sources have suggested to me, which could conceivably allow China quickly to achieve 400 or more warheads. These same sources also estimate a national missile-defense capability could emerge before the mid-2020s.

China is upgrading its aerospace capabilities closer to earth, too. Since the November PLA Air Force anniversary, PLA leaders have stated that China's fifth-generation fighter could fly "soon" and be in service by 2017-19, exceeding a recent U.S. government estimate by about a decade. Other Chinese sources speculate the PLA may build 300 of these fighters. As China signals its intention to build space-combat capabilities, increase the size and survivability of its nuclear missile forces, and build new fifth-generation air combat systems, the Obama administration is signaling retreat on the same fronts. Having declared his disdain for "Cold War" weapons in early 2009, it is unlikely that Mr. Obama will begin U.S. space-combat programs that could match and deter China in space. If anything, in fact, U.S. officials convey an **indifference to China's aggressive intent.** In early 2009, Mr. Obama reduced the limited number of ground-based missile interceptors to be based in Alaska and terminated a theater missile-defense program to enable one interceptor to shoot down multiple warheads. By August, the administration had defeated a Congressional attempt to extend production beyond 187 of the Lockheed Martin F-22, the premier U.S. fifth-generation jet fighter.

Continuing this course risks sacrificing the air superiority in Asia the U.S. has purchased through great sacrifice. If the PLA is able to attack U.S. space assets, it **can** limit the U.S. military's ability to detect and respond to PLA movements. Should China decide to increase its warhead numbers to the hundreds and defend them, the U.S. nuclear deterrent extended to Japan and other allies will lose its credibility**.** And if a larger number of PLA fifth-generation air-superiority fighters is able to overwhelm a lesser number of U.S. F-22s, then U.S. naval forces and bases in the Western Pacific will be more vulnerable to PLA air and missile strikes.

As a new U.S. administration tries to "move beyond the Cold War," primarily by limiting U.S. military power, China is signaling its intent to start an arms race. An American failure to respond would constitute a retreat from leadership. Asians will then face two unpalatable choices: **accommodate China or** obtain their own military deterrence. Both would increase **political instability** and in turn **threaten the region's economic growth.**

#### US leadership in Asia’s key to prevent Chinese seizure of shipping lanes and the Strait of Malacca

Spinetta 6 Major Lawrence, “The Malacca Dilemma-Countering China’s String of Pearls with Land Based Air Power”, <http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA476931>

With regard to Japan, China has made repeated incursions into Japanese territorial waters and the country's economic zones in order to warn its neighbor in unusually blunt terms that any interference with Beijing's designs over disputed territory will be met with force.30 Tensions between China and Japan over the enforcement of territorial claims and the exploitation of disputed natural resources could erupt in a conflict with wide regional repercussions.31 Japan's unilateral declaration of an exclusive economic zone in the East China Sea, the site of intensive hydrocarbon prospecting, may spark military confrontation. Energy as a Driver of China’s National Security Policy 32 No longer inward looking, China shifted its foreign policy focus towards achieving regional dominance, bolstering national prestige, ensuring diplomatic ascension, and safeguarding economic interests. With regard to the last, economic considerations are intimately intertwined with Chinese security strategy. As such, energy concerns loom large in Chinese foreign policy calculations. China’s desire to secure energy imports to fuel its economy remains a prime driver of its security policy. China’s demand for energy grew by more than 30 percent in 2003, and Chinese automobile ownership increased 80 percent during the past four years. China is the second largest consumer of oil in the world and the third largest importer of oil. Importing 60 percent of its oil from the Middle East, China is heavily dependent on foreign oil, particularly Middle Eastern sources.33 As China’s economy expands, its dependence on foreign oil will increase, exacerbating pressures to secure energy resources. In the near term, China is projected to remain the fastest growing energy consumer in the world. Oil industry experts expect Chinese imports to rise from 6 million barrels in 2004 to 16-20 million barrels per day in 2020. If this projection proves accurate, China will have to import eighty percent of its total oil consumption. Even if both China’s economy and oil consumption grows at a rate below expectations, many experts agree that China “faces acute and unavoidable energy vulnerabilities.”34 The specter of an impending energy crisis is not remote; China is already experiencing oil shortages. In 2004, 24 of China’s 31 provinces experienced power cuts as demand surpassed energy grid capacities. The Chinese government introduced energy rationing in industrial centers near Guangzhou and Shanghai, ordered six thousand factories to take a one-week break or operate at non-peak hours, and mandated shopping malls in Beijing reduce their air conditioning by one-third to conserve energy.35 The Chinese government recognizes “a growing reliance on Middle Eastern suppliers for stable energy supplies is problematic and must be mitigated through a comprehensive diversification strategy.”36 But, its diversification strategy has made little progress. China lost bids to buy stakes in oil fields outside the Middle East, such as its July 2005 failed attempt to buy UNOCAL.37 Similarly, a deal to build a land pipeline from Russia to China collapsed after Japan entered the competition and offered more money to reroute the pipeline. Because regional energy grids in Southeast Asia have been built in a piecemeal fashion, Chinese efforts to connect grids and facilitate regional energy interdependence have produced only marginal benefits. China’s dependence on sea lanes to import oil is a critical strategic vulnerability. Almost all of the oil that China imports passes through maritime chokepoints and hence, is susceptible to disruption. Eighty percent of China’s oil imports pass through the Strait of Malacca. In a 2003 speech to the Chinese Communist Party leadership, President Hu Jintao identified this dependence on sea lanes as a critical vulnerability and directed national security officials to figure out a solution for the “Malacca Dilemma.” Predictably, China is allocating substantial resources to its military, buying sophisticated weapons, and seeking to expand its influence in the Western Pacific and Indian Ocean based on fears that the United States will exploit this economic vulnerability in a potential conflict. A Strategic Crossroads China’s aggressive strategy to challenge US maritime superiority suggests traditionalists who view national security as a zero-sum game with the United States are triumphing over integrationists who favor cooperation. Traditionalists view security issues more narrowly through a military filter, whereas integrationists emphasize cooperation and interdependence.38 Traditionalists and integrationists advocate different methods of securing access to energy imports. Traditionalists support a policy of direct physical control. They advocate the resolution of territorial disputes with force if necessary and encourage Chinese companies to acquire equity in foreign natural resources.39 In contrast, integrationists argue China “must expand ties to foreign supplies through diverse market arrangements, encourage foreign suppliers to pursue ‘linking’ projects in China, expand cooperation with the International Energy Agency to better anticipate and respond to international energy crises, and increase reliance on markets.”40 Although China seems to be pursuing elements of both the traditionalist and integrationist approaches, its weight of effort and magnitude of military spending suggests the government is prioritizing a military approach over cooperation. China is at a strategic crossroads. China’s break-neck military build-up has given it the capability to increasingly threaten its neighbors and US regional influence.41 The government can either choose a martial path to an expanded sphere of influence, or it can broaden its definition of security and focus on economic growth through commercial rather than military means. Based on recent antagonistic actions, it is far from a forgone conclusion that the integrationists will eventually triumph in the policy debate and China will embark upon a path of benign competition. Ideological differences with the United States increase the risk that China will choose a martial path. Additionally, the 2005 Department of Defense annual report to Congress on Chinese military power identifies other factors that could lead to conflict. These include: ƒ Nationalistic fervor bred by expanding economic power and political influence ƒ Structural economic weakness and inefficiencies that undermine economic growth ƒ An inability to accommodate the forces of an open, transparent market economy ƒ A government that is still adapting to great power roles ƒ An expanding military-industrial complex that proliferates advanced weapons.42 The interactions of complex political, economic, and social forces within China and their influence on Chinese strategic behavior are difficult to predict. For example, economic stagnation could aggravate domestic political problems for Communist Party leaders, leading Beijing to reduce military spending. Conversely, Chinese leaders could shift investments to the military in a bid to sustain domestic support through nationalistic assertions abroad.43 An economic downturn and demographic change may catalyze the government to focus on internal rather than external threats to regime survival. Alternatively, an economic downturn may cause Chinese leaders to advocate the acquisition by force of natural resources to fuel their economy. The unpredictability of Taiwanese politics may provoke China to act militarily despite a willingness of certain factions within the Chinese government to negotiate a settlement. The point is that US action will not be the sole determinant or driver of Chinese foreign policy. The United States needs to be prepared for the contingency that China follows a less than friendly path. The Need for US Action The stakes are high; the United States cannot cede control of the region’s strategic waterways without incurring immeasurable risk to vital US interests. First, failure to respond to China’s “String of Pearls” strategy threatens US power projection capability. Emphasizing preparations to fight and win short-duration, high-intensity conflicts, China hopes to negate the United States’ ability to intervene in the region, especially during a conflict with Taiwan. The US military cannot perform its primary missions—peacetime engagement, deterrence and conflict prevention, and fighting and winning the nation’s wars—unless it maintains the ability to deploy forces in a timely and effective manner. China enjoys the enduring advantage of proximity and interior lines of communication in Asia.44 The United States must overcome the tyranny of distance to project power and to protect the region’s sea lines of communication. In a China-Taiwan conflict, delaying or harassing a US carrier task force may create conditions sufficient for PRC victory. Unimpeded access through the South China Sea is strategically important not only in the event of conflict in the region, but also as a route to the Persian Gulf. Sixty-four percent of the known global oil reserves are concentrated in the Middle East. Surrendering maritime control to China would effectively give it a vote in US foreign policy. Even if China did not actively oppose US forces transiting through strategic chokepoints, it could impose significant time delays and costs. For example, a naval battle group proceeding from Yokosuka, Japan to Bahrain forced to sail around Australia would require an additional 15 days of transit. The extra fuel costs alone would amount to almost $10 million.45 More critical than the monetary cost, the loss of speed and responsiveness may prove difficult to overcome.46 Second, failure to respond to China’s “String of Pearls” strategy would jeopardize freedom of navigation through chokepoints that are critically important to global economic interests. One quarter of the world’s trade passes through the Strait of Malacca. Over 1,100 fully laden supertankers, many with only a meter or two of clearance between their keels and the channel bottom, pass eastbound through the Strait each year.47 If China succeeds in gaining control of the Strait, then half of the world’s merchant fleet would be required to seek alternative routes. This situation would result in huge economic losses, delays in shipping, and generate a substantial increase in the requirement for vessel capacity. If the Chinese threaten to close the Strait of Malacca and merchant ships are re-routed, commercial transportation costs will increase by 60 percent.48 More importantly, China would be able to harm the economies of close allies, most notably Japan and South Korea. Threats to exert control over sea lanes would have an enormous impact, giving Beijing tremendous bargaining leverage. Japan and South Korea rely on US naval power to help protect the transit of their goods to market and the flow of resources. Seventy percent of Japan’s trade passes through the Strait of Malacca. The Japanese and South Korean economies are heavily dependent on the free passage of commercial traffic through the Strait of Malacca, yet neither country has the naval forces necessary to adequately protect its long-haul commercial shipping in the region. Not only does it benefit the United States to protect the vital interests of its close allies, the United States is bound by treaty to secure Japanese and South Korean sea lines of communication.49 An American failure to protect Japanese and South Korean interests would weaken strategic alliances and encourage those nations to take their own defensive measures, potentially setting the conditions for a spiraling arms race. Ross Terrill, a national security expert at Harvard’s Asia Center says, “A Japan that saw China eclipse the U.S. -- its major ally and whose primacy in East Asia explains six decades of Japanese restraint -- would surely challenge China.”50 If a regional arms race does not come to fruition and Japan chooses a conciliatory approach, then Japan may be forced into political accommodation as a result of overt Chinese threats or soft power influence. Developing a Hedge Strategy A Chinese national security strategist closely tied to the People’s Liberation Army stated, “When a nation embarks upon a process of shifting from an ‘inward-leaning economy’ to an ‘outward-leaning economy,’ the arena of national security concerns begins to move to the oceans. Consequently, people start to pay attention to sea power. This is a phenomenon in history that occurs so frequently that it has almost become a rule rather than an exception.”51 In an Atlantic Monthly article, “How We Would Fight China,” Robert Kaplan predicts a future conflict as the Chinese navy increasingly seeks to project power and control the region’s sea lanes. He warns, “Given the stakes, and given what history teaches us about the conflicts that emerge when great powers all pursue legitimate interests, the result is likely to be the defining military conflict of the twenty-first century: if not a big war with China, then a series of Cold War-style standoffs that stretch out over years and decades.”52 Many political scientists argue it’s a question of “when,” not “if” US-China relations sour (i.e., relations are defined by more than benign competition). As a result, some neo-conservatives advocate the United States follow a strategy that seeks to prevent or at least moderate China’s rise. Max Boot chides the Pentagon for failing to recognize China’s nefarious plotting and accuses “Chinese strategists, in the best tradition of Sun Tzu, [of] working on crafty schemes to topple the American hegemon.”53 In response, Richard Haas, president of the Council on Foreign Relations, points out, “One problem with this thinking is that the rise and fall of countries is largely beyond the ability of the United States or any other outsider to control. The performance of states is mostly the result of demographics, culture, natural resources, educational systems, economic policy, political stability, and foreign policy. It is not clear the United States could prevent China's rise even if it wanted to.”54 Either way, strained relations between the two countries are likely. While war with China is not inevitable, it would be a serious mistake for the United States not to protect its vital interests and create a hedge against the risk of some sort of conflict—military and/or diplomatic. China stands at a strategic crossroads, and the United States must be prepared to respond to the uncertainties of any Chinese course of action. The dispute over Taiwan is an obvious flashpoint, but countering Chinese soft power requires strategic considerations beyond preparing against direct military confrontation. The United States must be prepared to fully engage China, but also capable of responding to potential Chinese attempts to attain regional hegemony through force or intimidation. The United States has little influence over the pace and scope of Chinese military spending, but it can strive to maintain a strategic advantage in the region to protect trade, preserve regional influence, and threaten China’s strategic vulnerabilities if required. China’s ultimate goal is to control strategic chokepoints in the South China Sea and Indian Ocean. China’s “String of Pearls” strategy supports efforts to exclude the United States from the region. To offset the ability of Beijing to leverage its emergent military capabilities, the United States needs a sustained and robust naval and air presence in the region to prevent China from having the option of threatening US and allied interests. The United States should take steps to encourage a peaceful and prosperous China while pursuing a hedge strategy to reduce the risks associated with a China that chooses a belligerent attitude in the realm of foreign policy. Ross Terrill remarked, “The expansionist claims of Beijing are unique among today's powers. But the Chinese regime is a rational dictatorship that has, for the past quarter century, been patient in fulfilling its goals. It surely realizes that others -- such as the U.S., Japan, Russia and India -- have a variety of reasons for denying China the opportunity to be a 21st century Middle Kingdom. If Beijing continues to be faced with a countervailing equilibrium that keeps the peace in East Asia, it will probably act prudently.”55

**Collapse of Asian trade from Malacca causes nuclear war**

Auslin 9 Michael, resident scholar at AEI, “Averting Disaster”, The Daily Standard, 2/6, http://www.aei.org/publications/filter.all,pubID.29339/pub\_detail.asp

As they deal with a collapsing world economy, policymakers in Washington and around the globe must not forget that when a depression strikes, war can follow. Nowhere is this truer than in Asia, the most heavily armed region on earth and riven with ancient hatreds and territorial rivalries. **Collapsing trade flows** can lead to political tension, nationalist outbursts, growing distrust, and ultimately, military miscalculation. The result would be disaster on top of an already dire situation. Asia's political infrastructure may not be strong enough to resist the slide towards confrontation and conflict. No one should think that Asia is on the verge of conflict. But it is also important to remember what has helped keep the peace in this region for so long. Phenomenal growth rates in Japan, South Korea, Hong Kong, Singapore, China and elsewhere since the 1960s have naturally turned national attention inward, to development and stability. This has gradually led to increased political confidence, diplomatic initiatives, and in many nations the move toward more democratic systems. America has directly benefited as well, and not merely from years of lower consumer prices, but also from the general conditions of peace in Asia. Yet policymakers need to remember that even during these decades of growth, moments of economic shock, such as the 1973 Oil Crisis, led to instability and bursts of terrorist activity in Japan, while the uneven pace of growth in China has led to tens of thousands of armed clashes in the poor interior of the country. Now **imagine such instability multiplied region-wide**. The economic collapse Japan is facing, and China's potential slowdown, **dwarfs any previous economic troubles,** including the 1998 Asian Currency Crisis. Newly urbanized workers rioting for jobs or living wages, conflict over natural resources, further saber-rattling from North Korea, all can take on lives of their own. This is the nightmare of governments in the region, and particularly of democracies from newer ones like Thailand and Mongolia to established states like Japan and South Korea. How will overburdened political leaders react to internal unrest? What happens if Chinese shopkeepers in Indonesia are attacked, or a Japanese naval ship collides with a Korean fishing vessel? Quite simply, Asia's political infrastructure may not be strong enough to resist the slide towards confrontation and conflict. This would be a political and humanitarian disaster turning the clock back decades in Asia. It would almost certainly drag America in at some point, as well. First of all, we have **alliance responsibilities** to Japan, South Korea, Australia, and the Philippines should any of them come under armed attack. Failure on our part to live up to those responsibilities could mean the end of America's credibility in Asia. Secondly, peace in Asia has been kept in good measure by the continued U.S. military presence since World War II. There have been terrible localized conflicts, of course, but nothing approaching a systemic conflagration like the 1940s. Today, such a conflict would be far more bloody, and it is unclear if the American military, already stretched too thin by wars in Afghanistan and Iraq, could contain the crisis. Nor is it clear that the American people, worn out from war and economic distress, would be willing to shed even more blood and treasure for lands across the ocean. The result could be a historic changing of the geopolitical map in the world's most populous region. Perhaps China would emerge as the undisputed hegemon. Possibly democracies like Japan and South Korea would link up to oppose any aggressor. India might decide it could move into the vacuum. All of this is guess-work, of course, but it has happened repeatedly throughout history. There is no reason to believe we are immune from the same types of miscalculation and greed that have destroyed international systems in the past.

#### Space laser solves --- solves satellite vulnerability to Chinese ground-based laser attacks

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Space Operations: Could Give New Meaning to¶ “Space Superiority”33 — Laser weapons speed-of light¶ delivery, exceptional accuracy and adjustability¶ make them well suited for engaging targets¶ in space from the ground or for engaging targets¶ on the surface or in the lower atmosphere from¶ space. The lack of atmosphere to attenuate power¶ and the fact that they only need to be recharged¶ to be rearmed (for SSLs) also makes them ideal¶ space-to-space weapons. As noted earlier, laser¶ weapons can play a defensive role on space platforms,¶ but they clearly have offensive utility as well.¶ **Concerns over the offensive use of lasers against¶ space targets** have risen steadily since a Soviet¶ ground-based laser (GBL) tracked the Challenger¶ space shuttle at low power in 1984, causing¶ equipment malfunctions and crew distress.34 U.S.¶ experiments have also demonstrated that satellites¶ hundreds of kilometers up are vulnerable to high¶ energy GBLs.35 The importance of this capability¶ has not been lost on countries like China, which¶ is pursuing a robust high energy laser capability.36¶ For technologically sophisticated nations with¶ militaries that are dependent on information and¶ data (e.g., positioning/navigation/timing, intelligence,¶ surveillance and reconnaissance, and communications)¶ derived from space-based systems,¶ **the potential threat from GBLs is real.¶** Information about the target satellites’ operational¶ characteristics, like orbital parameters, is¶ readily available in open sources. The physical¶ destruction of satellites may not be as important¶ to the attacker as the ability to jam, spoof or otherwise¶ inhibit a spacecraft’s functional effectiveness¶ for a limited period of time. The beam’s¶ intensity and point of impact will determine the¶ GBL’s lethality and effectiveness against a spacebased¶ target. Due to the megawatt levels of¶ power required, chemical lasers rather than solidstate¶ lasers will most likely be the lasers of choice¶ for GBLs for the foreseeable future.¶ **Laser weapons could** also **be placed into orbit.¶** The vacuum of space is an **ideal environment for¶ lasers**, but orbital mechanics will dictate spacebased¶ lasers’ operational utility. However, for¶ offensive counter-space operations, timelines are¶ not usually critical. Over a period measured in¶ hours, a few space-based lasers get a good shot at¶ all low earth orbit (LEO) satellites. With sufficient¶ power levels, they could **attack targets from the¶ earth’s surface well into orbit**. If such weapons¶ are eventually developed and fielded, they might¶ be **so overwhelming that they would** make successful¶ operations in other mediums impossible¶ without first achieving true “space superiority.”

#### Space weapons are currently infeasible due to power limitations --- nuclear’s key

McCall 6 Chair, USAF Scientific Advisory Board, “Spacecraft Bus Technoligies,” http://www.au.af.mil/au/awc/awcgate/vistas/stechch3.pdf

All current spacecraft are either power limited or restricted in some measure by inadequate electrical power. Power limitations impose restrictions on the communications and propulsion subsystems and currently make large space-based radars and space-based weapons **relatively** unfeasible. A revolutionary change in capabilities will result from power technologies capable of providing large amounts of power onboard satellites. Large amounts of power will be enabling on spacecraft in the same sense that large amounts of random access memory have been enabling in personal computers. If power is not an issue, then previously hard applications become easy and new applications become possible. Evolutionary development of solar-array-based power technologies will see improvements to tens of kilowatts on satellites over the next decades. However, all solar collection systems in Earth orbit are limited by the solar constant of 1.4 kiloWatts per square meter. Large powers from solar collectors require large collection areas. For substantially larger powers (> 100 kW), several different types of technologies will have to be explored. Powers of this level will make large space-based radars, space-based directed energy weapons, and the use of high-performance electrically driven maneuvering technologies possible. **A natural technology to enable high power is nuclear power in space**; however, this technology has to date been considered unacceptable due to political and environmental limitations. Thus it is desirable to develop other technologies that may provide large power levels in space. In addition to continued development of safe **nuclear systems**, two other sources of continuous power in space that should be explored are the concepts of electrodynamic power-generating tethers and power beaming from one location to another (e.g., from space to space). The development of these and other technologies for high continuous power **will have a revolutionary effect** and the Air Force should invest in these areas as well as continuing to invest in solar collection technologies. Over the years, there have been several programs in nuclear powered spacecraft. NASA has been using Radioisotope Thermoelectric Generators (RTGs) for the interplanetary missions that generate a few tens of watts of power. Russia has flown nuclear reactors in space and BMDO has a joint program with the Russians (TOPAZ), under which the Defense department bought three of the reactors to do laboratory experiments. DoE had a program (SP 100) to use nuclear power in space and the Air Force had a nuclear propulsion program; these programs have been canceled. Nuclear power, however, remains one of the attractive alternatives in generating large amounts of power in space. To build a reactor for space applications has many challenging technical aspects including development of high-temperature lightweight materials, active cooling technologies, extremely radiation-hard and high-temperature electronics, and fail-safe system architectures. Setting the emotional issues of nuclear power aside, this technology offers a viable alternative for large amount of power in space. The Air Force should continue efforts towards making a safe nuclear reactor in space a viable option. Existing joint programs with Russia offer a low cost alternative and should be pursued. To build a reactor for space applications has many challenging technical aspects including development of high-temperature lightweight materials, active cooling technologies, extremely radiation-hard and high-temperature electronics, and fail-safe system architectures. Setting the emotional issues of nuclear power aside, this technology offers a viable alternative for large amount of power in space. The Air Force should continue efforts towards making a safe nuclear reactor in space a viable option. Existing joint programs with Russia offer a low cost alternative and should be pursued.

#### \*\*Military SMR development solves --- allows the Air Force to deploy a space laser

Maybury 12 Chief Scientist-USAF, “Energy Horizons: United States Air Force Energy S&T Vision 2011-2026,” 1/31, http://www.fas.org/irp/doddir/usaf/energy.pdf

Space is the ―ultimate high ground, providing access to every part of the globe, including denied areas. Space also has the unique characteristic that once space assets reach space, they require comparatively small amounts of energy to perform their mission, much of which is renewable. This simple characterization belies the complexity of the broader space enterprise. The bigger space energy picture must encompass the energy required to maintain and operate the launch ranges, the energy consumed during the launch of space assets, the energy generated and used in space, the energy consumed in satellite control stations, and the energy consumed in data ingest and processing centers. A comprehensive space energy strategy that addresses this full spectrum promises to enhance the resiliency, sustainability, and affordability of future space systems and operations through reduced consumption, increased energy supply, and cultural change. In the near-term, there should be an emphasis on lowering ground facilities and systems energy consumption, while continuing S&T investments for long-term assured energy advantage. The focus on ground facilities should include launch ranges, world-wide satellite control facilities, as well as the substantial data centers required to process and disseminate data to warfighters. In the longer term it may be possible to broaden the set of missions to be performed from space in an energy-efficient manner. This would require significant advances in S&T related to space-borne energy generation and storage technologies. In the mid- and long-term, substantial energy savings may be achieved through commonality in ground systems, efficient operations of those ground systems, as well as expanding the use of renewable energy resources. 3.1 Space Domain Strategic Context On-orbit assets continue to be among the highest demand and lowest density assets in the Air Force inventory. They consistently and effectively provide unique capability to the community. These assets are constrained, not just by the size of the payloads they carry, but also by their capability. Their austere operational environment coupled with current technology constraints means these systems regularly are required to operate long past their projected life. S&T that increases energy production, storage, and utilization of on-orbit assets can both provide longer life systems or increase capability value for the Air Force. In contrast to the air domain, assets in the space portfolio do not use traditional aviation fuels for mobility (airlift and air refueling). Indeed, once space assets are placed in orbit, with the very small exception of on-board consumables (to include propulsion for satellite maneuverability), only energy for the associated ground facilities and systems is required to maintain and operate them. Although there is an energy cost in getting systems to space, it is relatively small compared to the energy costs of the ground infrastructure. Therefore, in the near-term, investments in S&T that reduce the energy costs of space systems should focus primarily on reducing the energy costs of the associated ground facilities and systems. Nonetheless, there are promising S&T projects, such as the Reusable Booster System (RBS) and revolutionary small launch vehicles, that may substantially reduce the cost to orbit by applying lessons learned from the commercial aircraft industry to the RBS. For example, reuse may dramatically reduce manufacturing costs while simultaneously permitting much faster turnaround times. However, the full implications of reusable launch vehicles on energy consumption are not yet fully understood. The reusable components of RBS must be rocketed or jetted back to the launch base, resulting in greater use of energy for every launch. The energy impact of RBS requires detailed study. Additional potentially large energy cost savings could be achieved by employing other technologies emphasized in Technology Horizons, including fractionated, composable, and networked space systems. Much smaller systems that may perform the same functions as larger systems offer the possibility of substantially lowering launch costs and reducing on-orbit energy use. On the other hand, launching larger constellations of smaller satellites in low earth orbit may require more energy and use less efficient small launch vehicles. The total energy picture associated with the use of small, fractionated satellites requires careful analysis. Technology Horizons also advocated autonomous real-time, cross-domain, assured and trusted Space Situational Awareness (SSA). While autonomy can be used to save energy and cost for virtually any space mission, automating heavily human-directed SSA can potentially save large energy costs by reducing the presence of human interaction and, at the same time, increasing responsiveness. Figure 3.1 visually emphasizes that the overwhelming share of energy use for space domain operations is in terrestrial facilities and systems. Of the energy consumed for Air Force Space Command (AFSPC) missions, 97.2% is used by terrestrial facilities, 1.8% is used for ground vehicle transportation, and an estimated 1% is used for rocket launches. The commercial space sector has taken significantly different approaches on the ground infrastructure. Commercial space systems are operated with smaller facilities, small crews, and even autonomously. AFSPC has considered base closures to save significant costs; another solution, either in concert with base closures or by itself, is to establish an aggressive program to replace local power generation with renewable technologies. This would directly support the Air Force Energy Plan goals in the near-term, while also supporting assured sources of supply and cost reduction goals. Efforts are already underway to create more energy efficient ground assets using information from the cyber and infrastructure elements of Energy Horizons. A key opportunity is energy cost reduction for terrestrial radar and heating, ventilation, and air conditioning (HVAC) systems, but so far little work has been done on this. 3.2 Space Energy Technologies Leading edge technologies for energy performance of on-orbit space systems can transition to terrestrial facilities and systems to lower their energy intensity and consumption. These technologies fall into three categories which are addressed in turn: energy generation, storage, and transmission. 3.2.1 Energy Generation Table 3.1 illustrates the near-, mid- and far-term opportunities in energy generation. Today, there is an emphasis on continuing to evolve Inverted Meta-Morphic (IMM) solar cell arrays that are exceeding 34% efficiency in demonstration programs. In contrast, current terrestrial solar cell arrays for energy generation are far less efficient, below 20%. If packaging and production issues could be overcome, the improved efficiency offered by IMM would dramatically improve the output capabilities of ground facility solar array systems and, in turn, lower the use of non-renewable energy sources. There may also be spinoff to the air and ground domains through programs such as DARPA‘s Vulture program, a long-endurance unmanned vehicle powered by solar cells, which is taking advantage of the same kinds of efficiency improvements in terrestrial systems. The importance of these S&T efforts lies in the fact that every 1% increase in solar cell energy generation efficiency translates to a 3.5% increase in power (or decrease in mass) for the system. The downside is that as the efficiency improves, the relative benefit is not as great, so there is a point of diminishing returns with the evolutionary approach. In addition, amorphous-Silicon (a-Si) for flexible arrays has achieved 10% efficiency. While a-Si has not been fully space qualified, it could be transitioned to terrestrial systems such as Remotely Piloted Aircraft (RPA) and powered tents. There are other breakthrough space energy generation component technologies with the potential of achieving up to 70% efficiency. Examples include quantum dots and dilute nitrides in solar cells. But there are also entirely new technologies such as tethers to attempt to harvest energy from the geomagnetic field, and energy harvesting from system heat waste. These ideas, as well as **new developments in** nuclear energy, including **small modular reactors, can potentially fuel local facilities.** Recently, there has been progress in developing large systems for energy generation, including very large deployable panels as developed by the Air Force Research Lab (AFRL), DARPA, and industry. For example, we are currently limited to 27 kW arrays for satellite power, whereas more power is required for some future space missions by the AF, National Security Space (NSS), and NASA. **Employing larger and more efficient arrays will enable missions that require very high power, such as** space-based radar or **space-based laser missions**. An example of a system that is almost ready for a flight demonstration is the AFRL-Boeing 30 kW Integrated Blanket Interconnect System (IBIS). Figure 3.2 shows the technology and implementation concept for such a High Power Solar Array (HPSA). In the long term, increased solar cell efficiencies and revolutionary materials foreshadow the potential of 500 kW on-orbit power generation technologies, which would be transformational for performing missions from space-based systems. In addition to improving photovoltaic efficiencies, other potential energy production is possible in the mid- to far-term. In addition to modern designs for autosafing, small modular nuclear reactors for ground operations energy, nuclear energy has been demonstrated on several satellite systems (e.g., Radioisotope Thermoelectric Generators (RTG)). **This source provides consistent power regardless of harvestable resources** (i.e. solar) at a much higher energy and power density than current technologies. While the implementation of such a technology should be weighed heavily against potential catastrophic outcomes, **many investments into small modular reactors can be leveraged for space based systems. As these nuclear power plants decrease in size, their utility on board space based assets increases.**

#### \*\*It will be deployed --- Air Force wants SMRs in space now, they just need the tech

Puiu 12 Tibi Puiu – Studies Mechanical Engineering, Feb 23, 2012 “Air Force plans buildings a solar power station in space and nuclear-powered spacecraft”

http://billionyearplan.blogspot.com/2012/08/air-force-plans-buildings-solar-power.html

Last week, the U.S. Air Force released a report in which it outlines its technological and energy plans for the forthcoming 15 years. Among others, the Air Force means to deploy a space-based solar power station, which would serve energy wirelessly to both Earth and space satellites, as well as a new generation of **spacecraft powered by small nuclear reactors.**¶ This solar power satellite design features sets of lightweight, inflatable fresnel reflectors to focus the Sun's energy on small arrays of high-efficiency photovoltaic cells. (c) NASA¶ The 72-page long report, titled “Energy Horizons: United States Air Force Energy S&T Vision 2011-2026″, can be read in its entirety for thus curious enough here. It discusses measures the institution plans to meet in order to reach its energy goals, reduce demand and change military culture in sight of rapidly developing missions.¶ “Energy is a center of gravity in war and an assured energy advantage can enable victory,” said Mark Maybury, chief scientist for the United States Air Force. He spearheaded the report.¶ “While energy is already an essential enabler,” Maybury said. “Global competition, environmental objectives and economic imperatives will only increase its importance.”¶ Of great interest, is a solar-based power station, which would harness solar energy and then beam it to Earth using lasers. **The technology necessary to effectively transfer energy between space and Earth isn’t available at the moment**, however, **so** my guess is the Air Force has in mind distributing it towards satellites, **whether they belong to the Air Force,** NASA **or other national security agencies**. Air Force is currently limited to 27 kilowatt (kW) arrays for satellite power. In the future**,** it intends to massively increase its space energy array, which would also allow them to build smaller spacecraft, as they wouldn’t need to generate power for themselves. Also, sensors, communications equipment and on-board processing devices generally require a lot of energy, **and if you want to have a very powerful satellite, destined for space-based radar or space-based laser missions, you need to provide it somehow**. It would all be wireless **transmitted from the neighboring space power station.**¶Nuclear-powered spacecraft¶ When nuclear energy is concerned, there are already some satellites powered by Radioisotope Thermoelectric Generators (RTG), which provide steady and reliable power, at a much greater output than other technologies currently in place. However, the Air Force wants to take it up a notch and employ satellites powered by small nuclear reactors. We’ve discussed about nuclear fission power plants, small enough to fit in a briefcase, in one of our past posts – I’m guessing the Air Force is going for something similar. Of course, safety is a major concern, as outlined in the report.¶ “While the implementation of such a technology should be weighed heavily against potential catastrophic outcomes, many investments into small modular reactors can be leveraged for space-based systems. **As these nuclear power plants decrease in size, their utility on board space-based assets increases.**”¶ All of these prospects sound very interesting, one which might lead to impressive advancements of civilian applications, but one can only stand skeptical in the face of idea emitted by an agency of offense defense.

### 1AC – Plan

#### The Executive Branch of the United States should acquire electricity from small modular nuclear reactors for mission critical military installations in the United States.

### 1AC – Solvency

#### CONTENTION 3: SOLVENCY

#### Plan’s solves SMRs in the military -- doesn’t pick winners

Andres and Breetz 11 Richard B, Professor of National Security Strategy at the National War College and a Senior Fellow and Energy and Environmental Security and Policy Chair in the Center for Strategic Research, Institute for National Strategic Studies, at the National Defense University and Hanna L, doctoral candidate in the Department of Political Science at The Massachusetts Institute of Technology, February, "Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications", www.ndu.edu/press/lib/pdf/StrForum/SF-262.pdf

DOD as First Mover¶ Thus far, this paper has reviewed two of DOD’s most pressing energy vulnerabilities—grid insecurity and fuel convoys—and explored how they could be addressed by small reactors. We acknowledge that there are many uncertainties and risks associated with these reactors. On the other hand, failing to pursue these technologies raises its own set of risks for DOD, which we review in this section: first, small reactors may fail to be commercialized in the United States; second, the designs that get locked in by the private market may not be optimal for DOD’s needs; and third, expertise on small reactors may become concentrated in foreign countries. By taking an early “first mover” role in the small reactor market, DOD could mitigate these risks and secure the long-term availability and appropriateness of these technologies for U.S. military applications.¶ The “Valley of Death.” Given the promise that small reactors hold for military installations and mobility, DOD has a compelling interest in ensuring that they make the leap from paper to production. However, if DOD does not provide an initial demonstration and market, there is a chance that the U.S. small reactor industry may never get off the ground. The leap from the laboratory to the marketplace is so difficult to bridge that it is widely referred to as the “Valley of Death.” Many promising technologies are never commercialized due to a variety of market failures— including technical and financial uncertainties, information asymmetries, capital market imperfections, transaction costs, and environmental and security externalities— that impede financing and early adoption and can lock innovative technologies out of the marketplace. 28 In such cases, the Government can help a worthy technology to bridge the Valley of Death by accepting the first mover costs and demonstrating the technology’s scientific and economic viability.29¶ Historically, nuclear power has been “the most clear-cut example . . . of an important general-purpose technology that in the absence of military and defense related procurement would not have been developed at all.”30 Government involvement is likely to be crucial for innovative, next-generation nuclear technology as well. Despite the widespread revival of interest in nuclear energy, Daniel Ingersoll has argued that radically innovative designs face an uphill battle, as “the high capital cost of nuclear plants and the painful lessons learned during the first nuclear era have created a prevailing fear of first-of-a-kind designs.”31 In addition, Massachusetts Institute of Technology reports on the Future of Nuclear Power called for the Government to provide modest “first mover” assistance to the private sector due to several barriers that have hindered the nuclear renaissance, such as securing high up-front costs of site-banking, gaining NRC certification for new technologies, and demonstrating technical viability.32¶ It is possible, of course, that small reactors will achieve commercialization without DOD assistance. As discussed above, they have garnered increasing attention in the energy community. Several analysts have even argued that small reactors could play a key role in the second nuclear era, given that they may be the only reactors within the means of many U.S. utilities and developing countries.33 However, given the tremendous regulatory hurdles and technical and financial uncertainties, it appears far from certain that the U.S. small reactor industry will take off. If DOD wants to ensure that small reactors are available in the future, then it should pursue a leadership role now.¶ Technological Lock-in. A second risk is that if small reactors do reach the market without DOD assistance, the designs that succeed may not be optimal for DOD’s applications. Due to a variety of positive feedback and increasing returns to adoption (including demonstration effects, technological interdependence, network and learning effects, and economies of scale), the designs that are initially developed can become “locked in.”34 Competing designs—even if they are superior in some respects or better for certain market segments— can face barriers to entry that lock them out of the market. If DOD wants to ensure that its preferred designs are not locked out, then it should take a first mover role on small reactors**.**¶ It is far too early to gauge whether the private market and DOD have aligned interests in reactor designs. On one hand, Matthew Bunn and Martin Malin argue that what the world needs is cheaper, safer, more secure, and more proliferation-resistant nuclear reactors; presumably, many of the same broad qualities would be favored by DOD.35 There are many varied market niches that could be filled by small reactors, because there are many different applications and settings in which they can be used, and it is quite possible that some of those niches will be compatible with DOD’s interests.36¶ On the other hand, DOD may have specific needs (transportability, for instance) that would not be a high priority for any other market segment. Moreover, while DOD has unique technical and organizational capabilities that could enable it to pursue more radically innovative reactor lines, DOE has indicated that it will focus its initial small reactor deployment efforts on LWR designs.37¶ If DOD wants to ensure that its preferred reactors are developed and available in the future, it should take a leadership role now. Taking a first mover role does not necessarily mean that DOD would be “picking a winner” among small reactors, as the market will probably pursue multiple types of small reactors. Nevertheless, DOD leadership would likely have a profound effect on the industry’s timeline and trajectory.

#### Military is best at advancing SMRs

Cohen 12 Armond, Executive Director for the Clean Air Task Force, "DoD: A Model for Energy Innovation?", May 21, energy.nationaljournal.com/2012/05/powering-our-military-whats-th.php

Unlike most other agencies, including the Energy Department, the Pentagon is the ultimate customer for the new technology it helps create, spending some $200 billion each year on R&D and procurement. The implications of DoD’s role as customer have not been widely appreciated, as:¶ · DoD, uniquely in government, supports multi-year, billion-dollar “end to end” innovation efforts that produce technology that is continuously tested, deployed and refined on bases and in the field, providing real world feedback that leads to increases in performance and reductions in cost. By contrast, most of the federal government’s civilian energy innovation efforts involve research loosely connected at best with the few commercialization efforts that it supports.¶ · DoD and its contractors know how to bring together multiple innovations to achieve system-level advances leading to big performance gains (examples range from nuclear submarines to unmanned aircraft to large-scale information systems). This systems approach is precisely what is needed to advance clean energy technologies.¶ · Relatively stable, multi-year funding allows the Pentagon to pursue “long cycle” innovation that is necessary for large, capital- intensive technologies and supports a highly capable contractor base that can respond to changing national security demands.¶ · The Pentagon’s scope and budget has allowed it to experiment with new and creative innovation tools such as the well-known Defense Advanced Projects Research Agency, which has produced extraordinary technological breakthroughs; and the Environmental Security Technology Certification Program, which develops and demonstrates cost-effective improvements in environmental and energy technologies for military installations and equipment.¶ · Because of DoD’s size and demands for performance and reliability, it is unique among government and private sector organizations as a demonstration test-bed. Smart-grid technologies and advanced energy management systems for buildings are already poised to benefit from this aspect of the Pentagon’s innovation system.¶ · DoD has collaborated effectively with other federal agencies, including the Department of Energy and its predecessors (for example, to advance nuclear energy technologies). Continuing competition and cooperation between DoD and DOE will spur energy innovation. DoD’s innovation capabilities can enhance U.S. national security, improve U.S. international competitiveness, and spur global energy restructuring and greenhouse gas emissions reductions.¶ At the same time, while providing enormous opportunities to develop and test energy efficiency technologies and small scale distributed energy appropriate to forward bases, the Pentagon is unlikely to become an all-purpose hub for advancing all categories of clean-energy technologies, because its energy innovation activities will be sustainable only where they can support the nation’s defense capabilities.¶ Therefore, many other large-scale technologies that are of great importance to improving the environment, such as carbon-free central station generation or zero carbon transportation, may not as easily fit with DoD’s mission. Possible exceptions might include small modular nuclear reactors that can be used for producing independent, non-grid power at military bases, or, conceivably, zero-carbon liquid fuels other than anything resembling current generation biofuels.¶ In any case, the challenge for military-led energy innovation is to further define and delineate avenues for improved clean-energy performance that are linked to the national strategic mission. History shows that when such linkages are strong, DoD’s innovation capabilities are second to none.

#### SMRs solve nuclear downsides

Ringle 10 John, Professor Emeritus of Nuclear Engineering at Oregon State University, "Reintroduction of reactors in US a major win", November 13, robertmayer.wordpress.com/2010/11/21/reintroduction-of-reactors-in-us-a-major-win/

Small nuclear reactors will probably be the mechanism that ushers in nuclear power’s renaissance in the U.S.¶ Nuclear plants currently supply about 20 percent of the nation’s electricity and more than 70 percent of our carbon-free energy. But large nuclear plants cost $8 billion to $10 billion and utilities are having second thoughts about how to finance these plants.¶ A small modular reactor (SMR) has several advantages over the conventional 1,000-megawatt plant:¶ 1. It ranges in size from 25 to 140 megawatts, hence only costs about a tenth as much as a large plant.¶ 2. It uses a cookie-cutter standardized design to reduce construction costs and can be built in a factory and shipped to the site by truck, railroad or barge.¶ 3. The major parts can be built in U.S. factories, unlike some parts for the larger reactors that must be fabricated overseas.¶ 4. Because of the factory-line production, the SMR could be built in three years with one-third of the workforce of a large plant.¶ 5. More than one SMR could be clustered together to form a larger power plant complex. This provides versatility in operation, particularly in connection with large wind farms. With the variability of wind, one or more SMRs could be run or shut down to provide a constant base load supply of electricity.¶ 6. A cluster of SMRs should be very reliable.

 One unit could be taken out of service for maintenance or repair without affecting the operation of the other units. And since they are all of a common design, replacement parts could satisfy all units. France has already proved the reliability of standardized plants.¶ At least half a dozen companies are developing SMRs, including NuScale in Oregon. NuScale is American-owned and its 45-megawatt design has some unique features. It is inherently safe. It could be located partially or totally below ground, and with its natural convection cooling system, it does not rely on an elaborate system of pumps and valves to provide safety. There is no scenario in which a loss-of-coolant accident could occur.

# 2AC

## Case – Space

### SMRs Safe

#### SMRs are safe---passive mechanisms, less radiation, underground and prolif-resistant

Cunningham 12 Nick, Policy Analyst for Energy and Climate at the American Security Project, "Small Modular Reactors: A Possible Path Forward for Nuclear Power", October, americansecurityproject.org/ASP%20Reports/Ref%200087%20-%20Small%20Modular%20Reactors.pdf

Reduced Safety and Weapons Proliferation Concerns¶ SMRs can offer improved safety and security over conventional large reactors because of specific design features inherent to small reactors. First, one danger from nuclear power plants is the radiation from the reactor core. SMRs offer a reduction in danger from radiation because a smaller reactor core produces less radiation. 13¶ Second, due to their small size, SMRs are better able to incorporate passive safety features – those that do not require human or electronic actions to function properly. 14 These include cooling systems that use gravity instead of relying on access to power, natural convection systems, and passive heat removal. 15 For example, in the event something goes wrong, Westinghouse’s SMR is designed to keep the reactor cool for several days without the need for operators or power. 16 While the latest reactor designs are incorporating passive safety features, including for large reactors, passive safety features are inherently easier with small designs due to a smaller reactor core. ¶ Third, SMRs can benefit from a simplification of design, using less components, resulting in a more compact reactor. 17 SMR designs can eliminate the need for coolant pipes, which are considered the most significant safety challenge during the development of nuclear power plants. 18 An integral design, in which the primary reactor core, the steam generator, and the pressurizer are incorporated into a single common pressure vessel, is only possible in a small design. 19 In comparison, large reactors have components outside the containment vessel, increasing the chance of an accident. ¶ Fourth, unlike large reactors, SMRs can be installed underground, reducing the vulnerability to a terrorist attack or natural disaster. 20 A design from Gen4, a nuclear reactor vendor, seals off the reactor underground. This allows for it to never be opened once it is installed, enhancing proliferation resistance. 21 It would also operate for 10 years before refueling would be needed, compared to conventional large reactors that require refueling every 18-24 months. 22

### Space Militarization Inevitable

#### Space militarization is inevitable – the only question is effectiveness

Walker 8(Peter, The Guardian UK. “China and the arms race in space” 6-3-08. http://www.guardian.co.uk/news/blog/2008/jun/03/thearmsraceinspace)

Outside scrutiny of China has, understandably, been muted in the weeks following the Sichuan earthquake. But a new battle of strength between Asia's emerging superpower and the US is fast emerging - in the skies. In comments reported this week, Chinese military bigwigs have warned that an arms race in space is "unstoppable". China served notice of its capabilities in January when it used a ballistic missile to shoot down one of its own defunct satellites. The US is widely assumed to have parallel technology. A new book issued by the state-run China Arms Control and Disarmament Association, dissected by Reuters, warns that this was only the start. The buildup of weaponry in orbit "is already unstoppable", Wu Tianfu, of the 2nd Artillery Corps command college, which controls China's nuclear weaponry, says in the book. Strategic confrontation in outer space is difficult to avoid. The development of outer space forces shows signs that a space arms race to seize the commanding heights is emerging. Beijing remains officially set on drawing up secure multinational regulations to avoid a space arms race, but is clearly hedging its bets - something Washington is only too aware of. Last month, Brigadier General Jeffrey Horne, from the US Strategic Command, told a congessional advisory group that China was "aggressively" developing its ability to shoot down satellites, technology he predicted could be used in a future showdown over Taiwan. The US in turn must "proactively protect our space capabilities", he insisted. So that's that, it seems. The next time you think you see a shooting star in the heavens, it might be worth a second look.

## T

### 2AC T – Financial Incentive

#### We meet – plan is a financial incentive, not R+D – acquiring is T

US Code 3 Legal Information Institute, “41 USC § 131 – Acquisition”, November 24, <http://www.law.cornell.edu/uscode/text/41/131?quicktabs_8=1#quicktabs-8>

In division B, the term “acquisition”—¶ (1) means the process of acquiring, with appropriated amounts, by contract for purchase or lease, property or services (including construction) that support the missions and goals of an executive agency, from the point at which the requirements of the executive agency are established in consultation with the chief acquisition officer of the executive agency; and¶ (2) includes—¶ (A) the process of acquiring property or services that are already in existence, or that must be created, developed, demonstrated, and evaluated;¶ (B) the description of requirements to satisfy agency needs;¶ (C) solicitation and selection of sources;¶ (D) award of contracts;¶ (E) contract performance;¶ (F) contract financing;¶ (G) management and measurement of contract performance through final delivery and payment; and¶ (H) technical and management functions directly related to the process of fulfilling agency requirements by contract.

#### C/I – Financial incentives induce behaviors---that includes plan

Webb 93 – lecturer in the Faculty of Law at the University of Ottawa (Kernaghan, “Thumbs, Fingers, and Pushing on String: Legal Accountability in the Use of Federal Financial Incentives”, 31 Alta. L. Rev. 501 (1993) Hein Online)

In this paper, "financial incentives" are taken to mean disbursements 18 of public funds or contingent commitments to individuals and organizations, intended to encourage, support or induce certain behaviours in accordance with express public policy objectives. They take the form of grants, contributions, repayable contributions, loans, loan guarantees and insurance, subsidies, procurement contracts and tax expenditures.19 Needless to say, the ability of government to achieve desired behaviour may vary with the type of incentive in use: up-front disbursements of funds (such as with contributions and procurement contracts) may put government in a better position to dictate the terms upon which assistance is provided than contingent disbursements such as loan guarantees and insurance. In some cases, the incentive aspects of the funding come from the conditions attached to use of the monies.20 In others, the mere existence of a program providing financial assistance for a particular activity (eg. low interest loans for a nuclear power plant, or a pulp mill) may be taken as government approval of that activity, and in that sense, an incentive to encourage that type of activity has been created.21 Given the wide variety of incentive types, it will not be possible in a paper of this length to provide anything more than a cursory discussion of some of the main incentives used.22 And, needless to say, the comments made herein concerning accountability apply to differing degrees depending upon the type of incentive under consideration.¶ By limiting the definition of financial incentives to initiatives where *public funds are either disbursed or contingently committed*, a large number of regulatory programs with incentive *effects* which exist, but in which no money is forthcoming,23 are excluded from direct examination in this paper. Such programs might be referred to as *indirect* incentives. Through elimination of indirect incentives from the scope of discussion, thedefinition of the incentive instrument becomes both more manageable and more particular. Nevertheless, it is possible that much of the approach taken here may be usefully applied to these types of indirect incentives as well.24 Also excluded from discussion here are social assistance programs such as welfare and *ad hoc* industry bailout initiatives because such programs are not designed primarily to *encourage* behaviours in furtherance of specific public policy objectives. In effect, these programs are assistance, but they are not incentives.

#### Prefer our interp:

#### Precision---our definition’s from the DoE

Waxman 98 **–** Solicitor General of the US (Seth, Brief for the United States in Opposition for the US Supreme Court case HARBERT/LUMMUS AGRIFUELS PROJECTS, ET AL., PETITIONERS v. UNITED STATES OF AMERICA, http://www.justice.gov/osg/briefs/1998/0responses/98-0697.resp.opp.pdf)

2 On November 15, 1986, Keefe was delegated “the authority, with respect to actions valued at $50 million or less, to approve, execute, enter into, modify, administer, closeout, terminate and take any other necessary and appropriate action (collectively, ‘Actions’) with respect to Financial Incentive awards.” Pet. App. 68, 111-112. Citing DOE Order No. 5700.5 (Jan. 12, 1981), the delegation defines “Financial Incentives” as the authorized financial incentive programs of DOE, “including direct loans, loan guarantees, purchase agreements, price supports, guaranteed market agreements and any others which may evolve.” The delegation proceeds to state, “[h]owever, a separate prior written approval of any such action must be given by or concurred in by Keefe to accompany the action.” The delegation also states that its exercise “shall be governed by the rules and regulations of [DOE] and policies and procedures prescribed by the Secretary or his delegate(s).” Pet. App. 111-113.

#### Ground – weak solvency mechanisms suck and purchasing provides great spending and process CPs while still allowing the aff to beat states

#### No limits DA – money for energy is the topic

#### Reasonability – competing interpretations causes a race to the bottom – over-incentivizes going for T to arbitrarily limit out the aff

## CP

### 2AC Microgrids CP

#### DOD renewable initiatives fail---SMRs key

Andres and Breetz 11 Richard B, Professor of National Security Strategy at the National War College and a Senior Fellow and Energy and Environmental Security and Policy Chair in the Center for Strategic Research, Institute for National Strategic Studies, at the National Defense University and Hanna L, doctoral candidate in the Department of Political Science at The Massachusetts Institute of Technology, February, "Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications", www.ndu.edu/press/lib/pdf/StrForum/SF-262.pdf

In recent years, the U.S. Department of Defense (DOD) has become increasingly interested in the potential of small (less than 300 megawatts electric [MWe]) nuclear reactors for military use.1 DOD’s attention to small reactors stems mainly from two critical vulnerabilities it has identified in its infrastructure and operations: the dependence of U.S. military bases on the fragile civilian electrical grid, and the challenge of safely and reliably supplying energy to troops in forward operating locations. DOD has responded to these challenges with an array of initiatives on energy efficiency and renewable and alternative fuels**. Unfortunately, even with massive investment and ingenuity, these initiatives will be insufficient to solve DOD’s** reliance on the **civilian grid or its need for convoys in forward areas.** The purpose of this paper is to explore the prospects for addressing these critical vulnerabilities through small-scale nuclear plants.

#### Micro-grid fails---unreliable and quality problems

BIESI 11 Brookings Institution Energy Security Initiative, The Hoover Institution Shultz-Stevenson Task Force on Energy Policy, "Assessing the Role of Distributed Power Systems in the U.S. Power Sector", October, media.hoover.org/sites/default/files/documents/Distributed-Energy.pdf

Microgrid¶ Generation technologies are central to discussions around distributed energy systems. However, controls, infrastructure and demand side management are also an integral part of the broader discussion. The term ‘microgrid,’ is used to refer to a smaller version of a main or central electrical grid that much like its larger counterpart, consists of interconnected electrical loads and distributed energy generation resources that are typically controlled by a central control system. A microgrid may operate independently as its own self-contained entity, or may be interconnected with an adjoining central utility grid or neighboring microgrid. ¶ The concept of the microgrid is often associated with a power system in developing countries where the centrally managed grid is weak or inadequate. However, microgrid architectures are deployed in the United States including in various communities such as university campuses, hospitals, industry and military. Fully 74 percent of the global microgrid market dollars were spent in North America in 2010. 40¶ Although not a specific technology in itself, the notion of the microgrid is a system comprised of software, controls and hardware infrastructure including sensors, inverters, switches and converters. The microgrid and its primary components form the platform that is necessary for the integration of distributed generation resources with the local loads consuming the energy. The benefits of such architectures lie in the fact that they can be locally operated and controlled independent of a centrally managed utility. Such architecture enables distributed power systems, whether they operate on a stand-alone basis, or as an integrated component of a larger central grid.¶ 1.4 Functional Risks of DPS Technology Despite the policy support and cost declines in technology, DPS applications are constrained by several fundamental technical and functional factors. These factors give rise to risks associated with power quality, “dipatchability” and reliability. Some of the most important technical risks of widespread DPS deployment and integration are listed below. ¶ Power Quality¶ Some DPS technologies rely on power electronic devices, such as AC-to-DC or DC-to-AC converters. If such devices are not correctly set up, the integration of DPS power can result in a harmonic distortion and in operational difficulties to loads connected to the same distribution systems. 41¶ Reactive Power Coordination¶ With the proper system configuration and network interface, DPS can bring relief to the power system by providing close proximity power support at the distribution level. However, some renewable generation sources such as wind can worsen the reactive coordination problem. Wind generators have asynchronous induction generators designed for variable speed characteristics and, therefore, must rely on the network to which they are connected for reactive power support.42¶ Reliability and Reserve Margin¶ Intermittent power generation such as solar and wind is non-dispatchable. It is thus necessary to maintain sufficient generation reserve margins in order to provide reliable power generation. If there is a high level of distributed generation deployment, reserve margin maintenance can be a problem.

#### Microgrid’s reliance on multiple inputs fails

Amora 10 Ramon, Department of Electrical and Computer Engineering, Mississippi State University, “Controls for microgrids with storage: Review, challenges, and research needs”, Renewable and Sustainable Energy Reviews Volume 14, Issue 7, September 2010, Pages 2009–2018

Microgrids installations and integration in LV distribution systems will increase significantly in future. Consequently, distribution systems will have different characteristics from the current conventional distribution systems. The difference will be more significant with increased number of microgrids. Thus, suitable control strategies must be designed to anticipate this difference [50].¶ Besides to optimize system operation electrically, microgrid controls also aim to optimize production and consumption of heat, gas, and electricity in order to improve overall efficiency [22]. Moreover, controlling a large number of microsources having different characteristics will be very challenging due to the possibility of conflicting requirement and limited communication [6]. In case of decentralized or centralized controllers, control action required with probable lost input parameters will be surely challenging.¶ Transitions from grid-connected to islanded modes of operation are likely to cause large mismatches between generation and loads, causing a severe frequency and voltage control problem. The “plug-and-play” capability may also create serious problem if the connection and disconnection processes involve big number of microsources at the same time [6].

#### CP happened in 2006 and failed---it will be the same

Erwin 11 Sandra I, Editor, National Defense Magazine, July 2011, “High-Tech Weapon Makers Set Sights on ‘Smart Microgrid’ Market,” http://www.nationaldefensemagazine.org/archive/2011/July/Pages/High-TechWeaponMakersSetSightson%E2%80%98SmartMicrogrid%E2%80%99Market.aspx

Zilmer in 2006 specifically asked for a “hybrid-electric power station,” which is a variation of a smart microgrid. That urgent request evolved into the Army’s current hybrid-electric power management system that is still in the R&D stage. This illustrates how the Pentagon has mismanaged energy efficiency efforts, says Dan Nolan, a consultant at Sabot 6 Inc., an energy services company. The Pentagon in 2006 allocated $30 million to acquire the hybrid-electric power system that Zilmer requested. The Army’s “rapid equipping force” initially got the project rolling, but service officials later decided to turn it into a formal acquisition program. In hindsight, that was a bad decision, Nolan says. “After five years, you would think you would be pretty close to something,” he says. “It has been fumbling along.” To this day, “there are no hybrid electric power stations in theater.”¶ The Marine Corps’ much-publicized green technology that it deployed to Afghanistan is there now because it didn’t go through a traditional procurement process. In the Army, meanwhile, “it’s acquisition as usual,” Nolan says. “They move at their own pace.”¶ An ongoing Pentagon project known as “smart power infrastructure demonstration for energy reliability and security,” or SPIDERS, is seeking industry ideas for how to build smart grids in partnership with the departments of Homeland Security and Energy. ¶ Nolan says programs such as SPIDERS give industry some hope for increased funding for microgrids in the future, but so far efforts remain embryonic. “I don’t think this is an enormous technology leap,” Nolan says. The problem is that renewable energy and smart grids have yet to achieve cost parity with oil and coal. The reason advanced microgrids haven’t proliferated is that electricity is so cheap, he says. “It’s easier for the utilities to build a new coal power plant than it is to figure out the technology surrounding switching off someone’s refrigerator at 4 p.m. to increase supply at the local hospital.”¶ The Defense Department is backing green technology because it is a security issue, but it is not going to move as fast as many contractors would like, he says. Major defense firms such as Lockheed see this as “someplace where the money is really going,” but it is not apparent that microgrids require the same level of complex integration as an F-35 Joint Strike Fighter, says Nolan. ¶ “Everyone says the Defense Department is leading the charge in energy security. … But I hope the rest of the world isn’t depending on the Defense Department to do that,” he says.¶ The cost-parity issue that is likely to slow down the expansion of microgrids also applies to other green technologies. “If you have a new idea, you have to compete with Exxon,” says Nolan. “That’s really hard to do.”¶ In fiscal year 2012, the Pentagon is requesting $230 million for its green energy program. “Unless the money is hidden someplace else,” that is hardly a major investment, says Nolan. “I’m a small business, and I’m watching the fedbizopps offerings that are coming out, and I’m not really seeing it.”¶ Another tough obstacle to smart-grid growth is a perception that this technology is susceptible to cyber-attacks or to manipulation by Big Utility. ¶ “There is a lot of fear mongering about the arrival of the smart grid,” says Andrew Bochman, energy security lead at IBM Rational Software. The company, too, is pursuing new business in military smart grids. ¶ Just about every media story about cybersecurity in the context of utility grids has the words Armageddon, Apocalypse, Digital Pearl Harbor, or some other fear-inducing term, says Bochman. “Fear itself can be a real inhibitor to positive action,” he says. “It causes you to curl into a fetal position.”

### 2AC SERDP CP

#### Plan’s solves SMRs in the military -- doesn’t pick winners (1AC CARD)

Andres and Breetz 11 Richard B, Professor of National Security Strategy at the National War College and a Senior Fellow and Energy and Environmental Security and Policy Chair in the Center for Strategic Research, Institute for National Strategic Studies, at the National Defense University and Hanna L, doctoral candidate in the Department of Political Science at The Massachusetts Institute of Technology, February, "Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications", www.ndu.edu/press/lib/pdf/StrForum/SF-262.pdf

DOD as First Mover¶ Thus far, this paper has reviewed two of DOD’s most pressing energy vulnerabilities—grid insecurity and fuel convoys—and explored how they could be addressed by small reactors. We acknowledge that there are many uncertainties and risks associated with these reactors. On the other hand, failing to pursue these technologies raises its own set of risks for DOD, which we review in this section: first, small reactors may fail to be commercialized in the United States; second, the designs that get locked in by the private market may not be optimal for DOD’s needs; and third, expertise on small reactors may become concentrated in foreign countries. By taking an early “first mover” role in the small reactor market, DOD could mitigate these risks and secure the long-term availability and appropriateness of these technologies for U.S. military applications.¶ The “Valley of Death.” Given the promise that small reactors hold for military installations and mobility, DOD has a compelling interest in ensuring that they make the leap from paper to production. However, if DOD does not provide an initial demonstration and market, there is a chance that the U.S. small reactor industry may never get off the ground. The leap from the laboratory to the marketplace is so difficult to bridge that it is widely referred to as the “Valley of Death.” Many promising technologies are never commercialized due to a variety of market failures— including technical and financial uncertainties, information asymmetries, capital market imperfections, transaction costs, and environmental and security externalities— that impede financing and early adoption and can lock innovative technologies out of the marketplace. 28 In such cases, the Government can help a worthy technology to bridge the Valley of Death by accepting the first mover costs and demonstrating the technology’s scientific and economic viability.29¶ Historically, nuclear power has been “the most clear-cut example . . . of an important general-purpose technology that in the absence of military and defense related procurement would not have been developed at all.”30 Government involvement is likely to be crucial for innovative, next-generation nuclear technology as well. Despite the widespread revival of interest in nuclear energy, Daniel Ingersoll has argued that radically innovative designs face an uphill battle, as “the high capital cost of nuclear plants and the painful lessons learned during the first nuclear era have created a prevailing fear of first-of-a-kind designs.”31 In addition, Massachusetts Institute of Technology reports on the Future of Nuclear Power called for the Government to provide modest “first mover” assistance to the private sector due to several barriers that have hindered the nuclear renaissance, such as securing high up-front costs of site-banking, gaining NRC certification for new technologies, and demonstrating technical viability.32¶ It is possible, of course, that small reactors will achieve commercialization without DOD assistance. As discussed above, they have garnered increasing attention in the energy community. Several analysts have even argued that small reactors could play a key role in the second nuclear era, given that they may be the only reactors within the means of many U.S. utilities and developing countries.33 However, given the tremendous regulatory hurdles and technical and financial uncertainties, it appears far from certain that the U.S. small reactor industry will take off. If DOD wants to ensure that small reactors are available in the future, then it should pursue a leadership role now.¶ Technological Lock-in. A second risk is that if small reactors do reach the market without DOD assistance, the designs that succeed may not be optimal for DOD’s applications. Due to a variety of positive feedback and increasing returns to adoption (including demonstration effects, technological interdependence, network and learning effects, and economies of scale), the designs that are initially developed can become “locked in.”34 Competing designs—even if they are superior in some respects or better for certain market segments— can face barriers to entry that lock them out of the market. If DOD wants to ensure that its preferred designs are not locked out, then it should take a first mover role on small reactors**.**¶ It is far too early to gauge whether the private market and DOD have aligned interests in reactor designs. On one hand, Matthew Bunn and Martin Malin argue that what the world needs is cheaper, safer, more secure, and more proliferation-resistant nuclear reactors; presumably, many of the same broad qualities would be favored by DOD.35 There are many varied market niches that could be filled by small reactors, because there are many different applications and settings in which they can be used, and it is quite possible that some of those niches will be compatible with DOD’s interests.36¶ On the other hand, DOD may have specific needs (transportability, for instance) that would not be a high priority for any other market segment. Moreover, while DOD has unique technical and organizational capabilities that could enable it to pursue more radically innovative reactor lines, DOE has indicated that it will focus its initial small reactor deployment efforts on LWR designs.37¶ If DOD wants to ensure that its preferred reactors are developed and available in the future, it should take a leadership role now. Taking a first mover role does not necessarily mean that DOD would be “picking a winner” among small reactors, as the market will probably pursue multiple types of small reactors. Nevertheless, DOD leadership would likely have a profound effect on the industry’s timeline and trajectory.

#### DoD installations are key – market pull

Jeffrey Marqusee 12, Executive Director of the Strategic Environmental Research and Development Program (SERDP) and the Environmental Security Technology Certification Program (ESTCP) at the Department of Defense, “Military Installations and Energy Technology Innovation”, March, <http://bipartisanpolicy.org/sites/default/files/Energy%20Innovation%20at%20DoD.pdf>

The key reason that DoD cannot passively rely on the private sector to provide a suite of new, cost-effective energy technologies is the difficulty of the transition from research and development to full deployment. Many have noted this challenge; it is often described as the “Valley of Death,” a term widely used in the early and mid-1990s to describe the obstacles to commercialization and deployment of environmental technologies. DoD’s environmental technology demonstration program, the Environmental Security Technology Certification Program (ESTCP), was created to overcome that hurdle. Why can’t DoD rely on the Department of Energy (DOE) to solve the commercialization and deployment problem? DOE has a mixed record in this area. Reasons for past failures at DOE are: 1) the lack of a market within DOE for the technologies; 2) overly optimistic engineering estimates; 3) lack of attention to potential economic or market failures; 4) a disconnect between business practices at DOE and commercial practices, which leads to demonstration results that are not credible in the private sector; and 5) programs completely driven by a technology “push,” rather than a mix of technology push and market-driven pull.81 Many of these issues can be viewed as arising from the first: the lack of a market within DOE. Since DOE is neither the ultimate supplier nor buyer of these technologies at the deployment scale, it is not surprising that there are challenges in creating a system that can bring technologies across the Valley of Death. DoD’s market size allows it to play a critical role in overcoming this challenge for the energy technologies the department’s installations require, as it has for environmental technologies. In addressing the barriers energy technologies face, and understanding the role DoD installations can play, it is important to understand the type and character of technologies that DoD installations need. Energy technologies span a wide spectrum in costs, complexities, size, and market forces. Installation energy technologies are just a subset of the field, but one that is critical in meeting the nation’s and DoD’s energy challenges. DOE, in its recent strategic plans and quadrennial technology review, has laid out the following taxonomy (figure 3.5): It is useful to divide these energy technologies into two rough classes based on the nature of the market and the characteristics of deployment decisions. There are technologies whose capital costs at full scale are very high, for which a modest number of players will play a key role in implementation decisions. Examples include utility-scale energy generation, large-scale carbon sequestration, commercial production of alternative fuels, nextgeneration utility-grid-level technologies, and manufacturing of new transportation platforms. Some of these technologies produce products (e.g., fuel and power from the local utility) that DoD installations buy as commodities, but DoD does not expect to buy the underlying technology. A second but no less important class of energy technologies are those that will be widely distributed upon implementation, and the decisions to deploy them at scale will be made by thousands, if not millions, of decision makers. These include: 1) Technologies to support improved energy efficiency and conservation in buildings; 2) Local renewable or distributed energy generation; and 3) Local energy control and management technologies. Decisions on implementing these technologies will be made in a distributed sense and involve tens of thousands of individual decision makers if they are ever to reach large-scale deployment. These are the energy technologies that DoD installations will be buying, either directly through appropriated funds or in partnership with third-party financing through mechanisms such as Energy Saving Performance Contracts (ESPCs) or Power Purchase Agreements (PPAs). In the DOE taxonomy shown above, these distributed installation energy technologies cover the demand space on building and industrial efficiency, portions of the supply space for clean electricity when restricted to distributed generation scale, and a critical portion in the middle where microgrids and their relationship to energy storage and electric vehicles reside.

#### Acquisition could include R&D – not a mandate but going through CP’s mechanism works

Schwartz 10 Moshe Schwartz, Specialist in Defense Acquisition April 23, 2010, Defense Acquisitions: How DOD Acquires Weapon Systems and Recent Efforts to Reform the Process, http://www.fas.org/sgp/crs/natsec/RL34026.pdf

The Department of Defense (DOD) purchases goods and services from contractors to support military operations. Any **purchase of a good or service by DOD is defined as** a **procurement**. **In contrast**, the term defense **acquisition is a broader term that applies to more than just the purchase**, or procurement, of an item or service; the acquisition process encompasses the design, engineering, construction, testing, deployment, sustainment, and disposal of weapons or related items purchased from a contractor.1 DOD’s acquisition system is highly complex (see Appendix A), and does not always produce systems that meet anticipated cost or performance expectations.

#### DoD already established its recommendations for SMR adoption

King 11 Marcus King, Ph.D., Center for Naval Analyses Project Director and Research Analyst for the Environment and Energy Team LaVar Huntzinger, Thoi Nguyen, March 2011, Feasibility of Nuclear Power on U.S. Military Installations, www.cna.org/sites/default/files/research/Nuclear Power on Military Installations D0023932 A5.pdf

Recognizing nuclear power as a potential benefit to Department of Defense (DoD) facilities, Congress directed the DoD, in section 2845 of the National Defense Authorization Act (NDAA) of 2010, to “conduct a study to assess the feasibility of developing nuclear power plants on military installations” [12]. Specifically, the study is to consider the following topics:¶ • Options for construction and operation¶ • Cost estimates and the potential for life-cycle cost savings¶ • Potential energy security advantages¶ • Additional infrastructure costs¶ • Effect on the quality of life of military personnel¶ • Regulatory, state, and local concerns¶ • Effect on operations on military installations¶ • Potential environmental liabilities¶ • Factors that may impact safe colocation of nuclear power plants on military installations¶ • Other factors that bear on the feasibility of developing nuclear power plants on military installations.¶ To meet this requirement, the office of the Deputy Under Secretary of Defense for Installations and Environment, DUSD(I&E), asked CNA to conduct this feasibility study. The CNA effort was directed by a steering group consisting of representatives from DUSD (I&E), each of the military departments, DOE, NRC, and DOE Labs. This report documents our analysis and findings.

#### And it recommended against being an early adopter—proves the CP can’t establish a bureaucratic consensus for the plan

King 11 Marcus King, Ph.D., Center for Naval Analyses Project Director and Research Analyst for the Environment and Energy Team LaVar Huntzinger, Thoi Nguyen, March 2011, Feasibility of Nuclear Power on U.S.Military Installations, www.cna.org/sites/default/files/research/Nuclear Power on Military Installations D0023932 A5.pdf

The most significant risk for SMR power plants is associated with being an early adoptor of new technology. From a DoD perspective, economic feasibility depends on negotiating arrangements for the project that ensure DoD is not responsible for FOAK expenses. Having contractor owners and operators would reduce operating risks associated with being an early adoptor. If partners can’t be found who are willing to bear the FOAK and early adoptor risks then DoD should not undertake such a project. The recent MOU between DOE and DoD identifies a framework for cooperation and partnership for sharing risks associated with this type of project.

#### Links to politics

Hendricks 11 - Sr. Fellow @ Cntr. for American Progress

Bracken Hendricks, Sustaining DOD Leadership on Energy Security and Innovation, June 7th, 2011, http://www.americanprogressaction.org/wp-content/uploads/issues/2011/06/pdf/energy\_security\_memo.pdf

There is a long bipartisan tradition of support for Defense related technology innovation. In 2007 President George Bush signed into law the Energy Independence Security Act, or EISA. Section 526 of EISA requires any federal agency to consider the lifecycle greenhouse gas emissions associated with the production and combustion of alternative and synthetic fuels and ensure that they are “less than or equal to such emissions from the equivalent conventional fuel produced from conventional petroleum sources.” 3¶ This legislative requirement has spurred the DOD to focus on reduction of oil use through the development of more efficient vehicles, aircraft, and vessels, as well as the production of cleaner advanced biofuels. Unfortunately the House recently passed the National Defense Authorization Act, H.R. 1540, which would exempt DOD from restrictions on using fuels dirtier than conventional ones.4¶ Enactment of this provision could slow or halt the development of cleaner fuels, and put the military under tremendous pressure to use dirty coal over liquid-and tar sands-based fuels.¶ Similarly, the Department of Defense has used its procurement powers to reduce the strategic vulnerability of its installations and personnel, not just through reductions in oil dependence, but through a broad commitment to energy conservation and development of domestic renewable electricity and advanced materials. The branches of the military are empowering front line soldiers with new energy technology that reduces strategic vulnerability, and deploying “net-zero energy” bases at home that produce more energy than they consume through the use of secure microgrids and energy efficient and renewable energy generation.¶ These efforts are supported through the work of DOD initiatives like the Environmental Security and Technology Certification Program, the Energy Conservation Investment Program, the Strategic Environmental Research and Development Program, and numerous partnerships with universities and federal agencies. Through these efforts, DOD has sustained vital research and early phase deployment efforts that sustain the growth of domestic technologies and U.S. companies. While these efforts are not directly threatened by repeal of the EISA’s clean energy provisions, the administration and congress must remain vigilant that such essential programs receive robust and sustained support through tough economic times.

#### SERDP Budget does not include funding for nuclear research & is limited to one million per year – zero solvency or links to the net benefit

**LBA 11**

American Society for Plant Biologists, Funding Opportunities in Plant Biology, Lewis-Burke Associates LLC, Thursday, November 10, 2011

http://my.aspb.org/blogpost/697958/134096/DOD-Strategic-Environmental-Research-and-Development-Program

Through its Core solicitation, SERDP funds environmental research and development projects in the areas of Environmental Restoration, Munitions Response, Resource Conservation and Climate Change, and Weapons Systems and Platforms. Proposals must address a specific SON outlined in the solicitation. These topic areas span across the four primary research areas SERDP supports and vary year to year. SON for FY 2013 include the following:¶ In Situ Remediation of 1,4-Dioxane-Contaminated Groundwater¶ Improved Assessment and Optimization of Remediation Technologies for Treatment of Chlorinated Solvent-Contaminated Groundwater¶ Advanced Technologies for Detection, Classification, and Remediation of Military Munitions on Land¶ Improvements in the Detection, Classification, and Remediation of Military Munitions Underwater¶ Department of Defense Pacific Island Installations: Impacts of and Adaptive Responses to Climate Change¶ Improved Understanding of Soil Ecology to Meet Department of Defense Natural Resource Management Challenges¶ Non-Isocyanate Polymers for Military Topcoats¶ Ionic Liquids Technology¶ Environmentally Advantaged Submunitions¶ Application of Synthetic Biological Techniques for Energetic Materials¶ Projects funded under the Core solicitation vary in cost and duration and typically range from $150,000 to $1 million per year. All Core SON allow researchers to submit a standard proposal for complete research efforts or submit limited scope proposals that entail high-risk, innovative approaches to the specific SON addressed. These limited proposals will receive up to one year of funding at $150,000; the goal of limited scope proposals is to acquire necessary data and establish proof of concept that will lead to a future standard proposal.¶ Pre-proposals will be rated on technical merit, qualifications and capabilities of researchers, and reasonableness of costs. SERDP will rate invited full proposals in these areas as well as evaluate proposals’ transition plan for implementation, especially for late-stage development projects, and proposals’ small business participation. While private sector partners are not required for universities, DOD aims to have five percent of the total contract value for its Core solicitation come from small business.¶ DOD anticipates spending a total of $8 million on multiple proposals under its Core solicitation for FY 2013, pending funding availability and quality of proposals. SERDP does not specify funding limits for Core proposals, but Core projects typically range from $150,000 to $1 million per year. Researchers may submit limited scope proposals for a SON that focuses on high-risk, innovative research; these proposals will receive $150,000 for one year. Universities, as well as private sector companies, are eligible for funding through this solicitation.

## DA

### Incentives Now

#### DOE funding SMRs now---more to come

Holly 12/6 Derrill, ECT Staff Writer, "DOE Advances Small Nuclear Reactors", 2012, [www.ect.coop/power-supply/power-plants/doe-funds-small-nuclear-reactors-project/50667](http://www.ect.coop/power-supply/power-plants/doe-funds-small-nuclear-reactors-project/50667)

The Department of Energy has agreed to help fund a small modular nuclear reactor design backed by a consortium that includes several generation and transmission electric cooperatives.¶ After reviewing several proposals, DOE selected a project led by Bechtel Corp., Babcock & Wilcox and the Tennessee Valley Authority. The mPower Consortium was formed in in 2010 to support the Generation mPower small modular nuclear reactor design. The consortium includes investor-owned FirstEnergy, TVA, and 13 G&Ts.¶ The lead companies have proposed deployment of up to five 180 megawatt Babcock & Wilcox mPower reactors at TVA’s abandoned Clinch River Breeder Reactor site in Oak Ridge, Tenn.¶ “DOE will match future engineering and design development, design certification and licensing activities up to a cap of $452 million,” said Sandra Byrd, vice president of member and public relations for Little Rock-based Arkansas Electric Cooperative Corp. “Although the mPower design is already far along, it still requires more testing and the design certification documents have to be developed and submitted to the Nuclear Regulatory Commission for approval.”¶ Plans call for the consortium to submit documentation to NRC by December 2013. An early site permit and a construction and operating license application will also be developed for submission over the next year.¶ “This will be the first time that a small nuclear design has been submitted to NRC for review and approval,” said Byrd, adding that commercial operation could begin between 2020 and 2022. Successful deployment of the technology is expected to lead to development of nuclear power plants roughly one-third the size of existing facilities, and DOE plans to issue additional funding opportunities.¶ “More is obviously better. Different designs may lend themselves to different utility operating situations,” said Byrd. Co-ops supported proposals from three of the four companies that sought consideration under the initial DOE cost-sharing grant.¶ Arkansas Electric Cooperative Corp. is among mPower Consortium backers also supporting the NexStart SMR Alliance led by Westinghouse and investor-owned Ameren Missouri. Springfield, Mo.-based Associated Electric Cooperative is also supporting the group.

### 2AC LWR DA

#### LWRs inevitable globally---it will be unsafe and cause proliferation absent renewed US leadership

Loudermilk 11—Research Associate for the Energy & Environmental Security Policy program with the Institute for National Strategic Studies at National Defense University (Micah, Small Nuclear Reactors and US Energy Security: Concepts, Capabilities, and Costs, www.ensec.org/index.php?option=com\_content&view=article&id=314:small-nuclear-reactors-and-us-energy-security-concepts-capabilities-and-costs&catid=116:content0411&Itemid=375)

Reactor safety itself notwithstanding, many argue that the scattering of small reactors around the world would invariably lead to increased proliferation problems as nuclear technology and know-how disseminates around the world. Lost in the argument is the fact that this stance assumes that US decisions on advancing nuclear technology color the world as a whole. In reality, regardless of the US commitment to or abandonment of nuclear energy technology, **many countries** (notably China) **are blazing ahead** with research and construction, with 55 plants currently under construction around the world—though Fukushima may cause a temporary lull.¶ Since Three Mile Island, the US share of the global nuclear energy trade has declined precipitously as talent and technology begin to concentrate in countries more committed to nuclear power. On the small reactor front, more than 20 countries are examining the technology and the IAEA estimates that 40-100 small reactors will be in operation by 2030. Without US leadership, new nations seek to acquire nuclear technology **turn to countries other than the US who may not share a deep commitment to reactor safety and nonproliferation objectives**. **Strong US leadership globally on nonproliferation requires a vibrant American nuclear industry.** This will enable the US to set and enforce standards on nuclear agreements, spent fuel reprocessing, and developing reactor technologies.

#### SMRs solve prolif leadership better

Mandel 9

(Jenny – Scientific American, Environment & Energy Publishing, LLC, “Less Is More for Designers of "Right-Sized" Nuclear Reactors” September 9, 2009, http://www.scientificamerican.com/article.cfm?id=small-nuclear-power-plant-station-mini-reactor)

Tom Sanders, president of the American Nuclear Society and manager of Sandia National Laboratories' Global Nuclear Futures Initiative, has been stumping for small rectors for more than a decade. American-made small reactors, Sanders insists, can play a central role in global nonproliferation efforts. "Our role at Sandia is the national security-driven notion that it's in the interests of the U.S. to be one of the dominant nuclear suppliers," Sanders said. While U.S. companies have been exiting the industry over the past decades as government and popular support for new construction has waned, Sanders maintains that **strong U.S. participation in the nuclear energy marketplace** would give diplomats a new tool to use with would-be nuclear powers. "It's hard to tell Iran what to do if you don't have anything Iran wants," he explained. Sanders said mini-reactors are ideal to sell to developing countries that want to boost their manufacturing might and that would otherwise look to other countries for nuclear technologies**. If the U**nited **S**tates **is not participating in that market**, he said, **it becomes hard to steer buyers away from technologies that pose greater proliferation risks.** Sanders been promoting this view since the 1990s, he said, when he realized "we were no longer selling nuclear goods and services, so we could no longer write the rules." The domestic nuclear industry had basically shut down, with no new construction in decades **and a flight of talent and ideas overseas**. There is a silver lining in that brain drain, though, he believes, in that U.S. companies getting back into the game now are less tied to the traditional, giant plants and are freer to innovate. A feature that several of the new product designs share is that the power plants could be mass-produced in a factory to minimize cost, using robots to ensure consistency. Also, with less design work for each installation, the time to complete an order would be shortened and some of the capital and other costs associated with long lead times avoided, Sanders said. Another feature he favors is building the plants with a lifetime supply of fuel sealed inside. Shipped loaded with fuel, such reactors could power a small city for 20 years without the host country ever handling it. Once depleted, the entire plant would be packed back up and shipped back to the United States, he said, with the sensitive spent fuel still sealed away inside. Sanders is working on a reactor design hatched by the lab with an undisclosed private partner. He believes it is feasible to build a prototype modular reactor -- including demonstration factory components and a mockup of the reactor itself -- as early as 2014, for less than a billion dollars. A mini-reactor could ring up at less than $200 million, he said, or at $300 million to $400 million with 20 years of fuel. At $3,000 to $4,000 per kilowatt, he said, that would amount to significant savings over estimates of $4,000 to $6,000 per kilowatt for construction alone with traditional plant designs. To get a design ready to build, Sanders is urging a partnership between the government and the private sector. "If it's totally a government research program, labs can take 20 to 30 years" to finish such projects, he said. "If it becomes a research science project, it could go on forever." New approach, old debates So far, **there is no sign that the** government's nuclear gatekeeper, **NRC, is wowed by the small-reactor designs.** NRC's Office of New Reactors warned Babcock & Wilcox in June that the agency "will need to limit interactions with the designers of small power reactors to occasional meetings or other nonresource-intensive activities" over the next two years because of a crowded schedule of work on other proposals. Meanwhile, opponents of nuclear technologies are not convinced that small reactors are an improvement over traditional designs. Arjun Makhijani, who heads the Institute for Energy and Environmental Research, a think tank that advocates against nuclear power, sees disseminating the technology as incompatible with controlling it. "A lot of the proliferation issue is not linked to having or not having plutonium or highly enriched uranium, but who has the expertise to have or make bombs," Makhijani said. "In order to spread nuclear technologies, you have to have the people who have the expertise in nuclear engineering, who know about nuclear materials and chain reactions and things like that -- the same expertise for nuclear bombs. That doesn't suffice for you to make a bomb, but then if you clandestinely acquire the materials, then you can make a bomb." Peter Wilk, acting program director for safe energy with Physicians for Social Responsibility, an anti-nuclear group, argues that expanding nuclear power use runs counter to the goal of nonproliferation. "The whole proposition presupposes an ... international economy in which more and more fuel is produced and more and more waste must be dealt with, which only makes those problems that are still unsolved larger," he said. "It may or may not do a better job of preventing the host country from literally getting their hands on it, but it doesn't reduce the amount of fuel in the world or the amount of waste in the world," Wilk added. And then there is the issue of public opinion. "Imagine that Americans would agree to take the waste that is generated in other countries and deal with it here," Makhijani said. "At the present moment, it should be confined to the level of the fantastic, or even the surreal. If [the technology's backers] could come up with a plan for the waste, then we could talk about export." Makhijani pointed to a widely touted French process for recycling nuclear waste as a red herring (ClimateWire, May 18). "It's a mythology that it ameliorates the waste problem," he said. According to Makhijani's calculations, the French recycling process generates far more radioactive waste than it cleans up. One category of highly radioactive material, which ends up stored in glass "logs" for burial, is reduced, he said. But in processing the waste, about six times the original volume of waste is produced, he said. Much of that must be buried deep underground, and the discharge of contaminated wastewater used in recycling has angered neighboring countries, he said. Operational risk, of course, is another major concern. "One has reduced the amount of unnecessary risk," Wilke said, "but it's still unnecessary risk." He added, "I get the theory that smaller, newer, ought to be safer. The question is: Why pursue this when there are so many better alternatives?" To Sandia's Sanders, Wilke is asking the wrong question. With the governments of major economies like China, Russia and Japan putting support and cash into nuclear technologies, the power plants are here to stay, he believes. "There's going to be a thousand reactors built over the next 50 years," he said. "The question is: Are we building them, or are we just importing them?"

#### Nuclear leadership fails---U.S. won’t exercise it, agency competition constrains it, and it doesn’t cause other states to change behavior

Richard Cleary 12, Research Assistant at the American Enterprise Institute, 8/13/12, “Persuading Countries to Forgo Nuclear Fuel-Making: What History Suggests,” http://npolicy.org/article.php?aid=1192&tid=30

In recent years, there has been a resurgence of proposals designed to limit the spread of nuclear fuel-making facilities, with the understanding that ostensibly peaceful technology can allow for the production of the fissile material required for a nuclear weapon. With U.S. proposals ranging from the Global Nuclear Energy Partnership (GNEP) to a revamped, “Gold Standard” bilateral nuclear cooperation agreement, a wider array of tools has been put at the disposal of American policy makers. Prominent members of the international community have become agitated about the prospect of the proliferation of fuel-making technology as well, with numerous proposals of fuel assurances put forward by such disparate figures as Vladimir Putin and Mohamed ElBaradei. But renewed enthusiasm for nonproliferation begs questions about how novel the instruments proposed are, and, moreover, how effective they are likely to be, particularly for the country historically at the head of nonproliferation efforts, the United States. A review of this historical record suggests that optimism about the U.S. ability to dissuade countries from this path is misplaced.

This essay considers supply side proposals of fuel assurance, multilateral fuel-making, as well as specific interventions on both the supply and demand sides, consulting particular cases in Iran (1974-1978), West Germany-Brazil (1975-1977), South Korea (1974-1976) and Pakistan (1972-1980) to draw lessons about the effectiveness of U.S. practices under differing circumstances. The record these cases give is mixed, due to two principal causes. The first is the failure of the U.S. to consistently prioritize nonproliferation efforts given Washington’s global and competing interests, interests that tend to be embraced by different factions in the federal government apparatus but whose ultimate arbiter is the president (along with his close advisors). The second is the tendency of decisions about nuclear fuel-making by the state in question to be influenced more by fundamental trends or factors than diplomatic maneuvering from Washington; diplomacy is most effective when it has the political, economic and military backing to implicate these issues. The most important factor in U.S. efforts has tended to be the bilateral relationship between Washington and the country at hand. Decision-makers who consider their country’s relationship with the U.S. to be strategically vital—and believe that fuel-making would threaten this relationship—are most likely to forgo enrichment and reprocessing (ENR) technology. This calculus can be informed by a range of dynamics, some beyond U.S. control, such as security concerns, issues of prestige, and commercial and industrial interests. Domestic politics and public opinion, both in the United States and in the country considering fuel-making, can be influential.

#### Tech diffusion’s already happened, but prolif is glacially slow

Jacques E.C. Hymans 12, Assistant Professor in the School of International Relations at the University of Southern California, May/June 2012, “Botching the Bomb,” Foreign Affairs, Vol. 91, No. 3

"TODAY, ALMOST any industrialized country can produce a nuclear weapon in four to five years," a former chief of Israeli military intelligence recently wrote in The New York Times, echoing a widely held belief. Indeed, the more nuclear technology and know-how have diffused around the world, the more the timeline for building a bomb should have shrunk. But in fact, rather than speeding up over the past four decades, proliferation has gone into slow motion.

Seven countries launched dedicated nuclear weapons projects before 1970, and all seven succeeded in relatively short order. By contrast, of the ten countries that have launched dedicated nuclear weapons projects since 1970, only three have achieved a bomb. And only one of the six states that failed -- Iraq -- had made much progress toward its ultimate goal by the time it gave up trying. (The jury is still out on Iran's program.) What is more, even the successful projects of recent decades have needed a long time to achieve their ends. The average timeline to the bomb for successful projects launched before 1970 was about seven years; the average timeline to the bomb for successful projects launched after 1970 has been about 17 years.

International security experts have been unable to convincingly explain this remarkable trend. The first and most credible conventional explanation is that the Nuclear Nonproliferation Treaty (NPT) has prevented a cascade of new nuclear weapons states by creating a system of export controls, technology safeguards, and on-site inspections of nuclear facilities. The NPT regime has certainly closed off the most straightforward pathways to the bomb. However, the NPT became a formidable obstacle to would-be nuclear states only in the 1990s, when its export-control lists were expanded and Western states finally became serious about enforcing them and when international inspectors started acting less like tourists and more like detectives. Yet the proliferation slowdown started at least 20 years before the system was solidified. So the NPT, useful though it may be, cannot alone account for this phenomenon.

### 2AC Debt Ceiling DA

#### Won’t pass---GOP won’t back down

LA Times 12/31 Kathleen Hennessey and David Lauter, "Obama wins 'fiscal cliff' victory, but at high cost", 2012, www.latimes.com/news/nationworld/nation/la-na-fiscal-cliff-analysis-20130101,0,6417926.story

Others, however, expressed doubt that Obama would be able to achieve his additional goals now that his trump card had been played. The president's leverage in the current negotiations had been the automatic tax increase set to take effect Tuesday. If Republicans did not vote for a deal, taxes would go up for everyone, and polls indicated voters were inclined to blame them, not Obama.¶ The challenge of squeezing tax increases out of a Republican-led House will get harder, not easier, in the new year. Without the threat of an automatic tax increase, Obama has much less leverage, said Jared Bernstein, the former chief economist and economic advisor to Vice President Joe Biden. And Republicans will gain leverage through their threats to refuse an increase in the debt ceiling, which would cause the government to default on its bonds.¶ "While the White House had the leverage, it would have been very good for them to deal with the debt ceiling," Bernstein said. "The Republicans are absolutely sharpening their knives for that next fight, which is horrific, by comparison — a much worse self-inflicted wound on the economy."

#### Obama has zero leverage in the debt ceiling fight---PC’s irrelevant

Joshua Holland 1-1, editor and senior writer at AlterNet, 1/1/13, “What the Fiscal Cliff Deal Was Really About,” http://www.alternet.org/print/election-2012/what-fiscal-cliff-deal-was-really-about

It's simply a hostage exchange. The Republicans gave up the fiscal cliff, and will now take the debt limit, the federal budget and automatic across-the-board cuts to discretionary spending (the sequester), and have another standoff in 2-3 months time. The deal wouldn't have gotten 85 GOP votes in the House without the leadership giving right-wingers ironclad guarantees that they'll have another hostage soon. ¶ What leverage will the White House have at that point? They've already rejected the "constitutional option" to avoid the debt ceiling -- and won't mint a big platinum coin [4]. The Bush tax cuts on high earners will be off the table. That leaves cuts to defense -- which Republicans hate -- and public opinion, to which the GOP doesn't seem terribly responsive when its base is screaming murder and threatening primaries (which is always). That's pretty thin gruel given that the "austerity caucus" thinks it has a good shot at cutting Social Security and Medicare as part of a "grand bargain" with Obama. ¶ Other than that, we'll only have the Democrats' legendary iron back-bone on which to rely. Nobody's ever gotten rich betting on that.

#### Executive military action shields

Davenport 12 Coral, energy and environment correspondent for National Journal, Prior to joining National Journal in 2010, Davenport covered energy and environment for Politico, and before that, for Congressional Quarterly. In 2010, she was a fellow with the Metcalf Institute for Marine and Environmental Reporting. From 2001 to 2004, Davenport worked in Athens, Greece, as a correspondent for numerous publications, including the Christian Science Monitor and USA Today, covering politics, economics, international relations and terrorism in southeastern Europe. She also covered the 2004 Olympic Games in Athens, and was a contributing writer to the Fodor’s, Time Out, Eyewitness and Funseekers’ guidebook series. Davenport started her journalism career at the Daily Hampshire Gazette in Northampton, Massachusetts, after graduating from Smith College with a degree in English literature. National Journal, 2/10, White House Budget to Expand Clean-Energy Programs Through Pentagon, ProQuest

The White House believes it has figured out how to get more money for clean-energy programs touted by President Obama without having it become political roadkill in the wake of the Solyndra controversy: **Put it in the Pentagon**. While details are thin on the ground, lawmakers who work on both energy- and defense-spending policy believe the fiscal 2013 budget request to be delivered to Congress on Monday probably won't include big increases for wind and solar power through the Energy Department, a major target for Republicans since solar-panel maker Solyndra defaulted last year on a $535 million loan guarantee. But they do expect to see increases in spending on alternative energy in the Defense Department, such as programs to replace traditional jet fuel with biofuels, supply troops on the front lines with solar-powered electronic equipment, build hybrid-engine tanks and aircraft carriers, and increase renewable-energy use on military bases. While Republicans will instantly shoot down requests for fresh spending on Energy Department programs that could be likened to the one that funded Solyndra, many support alternative-energy programs for the military. "I do expect to see the spending," said Rep. Jack Kingston, R-Ga., a member of the House Defense Appropriations Subcommittee, when asked about increased investment in alternative-energy programs at the Pentagon. "I think in the past three to five years this has been going on, but that it has grown as a culture and a practice - and it's a good thing." "If Israel attacks Iran, and we have to go to war - and the Straits of Hormuz are closed for a week or a month and the price of fuel is going to be high," Kingston said, "the question is, in the military, what do you replace it with? It's not something you just do for the ozone. It's strategic." Sen. Lindsey Graham, R-S.C., who sits on both the Senate Armed Services Committee and the Defense Appropriations Subcommittee, said, "I don't see what they're doing in DOD as being Solyndra." "We're not talking about putting $500 million into a goofy idea," Graham told National Journal . "We're talking about taking applications of technologies that work and expanding them. I wouldn't be for DOD having a bunch of money to play around with renewable technologies that have no hope. But from what I understand, there are renewables out there that already work." A senior House Democrat noted that this wouldn't be the first time that the **Pentagon has been utilized to advance policies that wouldn't otherwise be supported**. "They did it in the '90s with medical research," said Rep. Henry Waxman, D-Calif., ranking member of the House Energy and Commerce Committee. In 1993, when funding was frozen for breast-cancer research programs in the National Institutes of Health, Congress boosted the Pentagon's budget for breast-cancer research - to more than double that of the health agency's funding in that area. **Politically, the strategy makes sense**. Republicans are ready to fire at the first sign of any pet Obama program, and renewable programs at the Energy Department are an exceptionally ripe target. That's because of Solyndra, but also because, in the last two years, the Energy Department received a massive $40 billion infusion in funding for clean-energy programs from the stimulus law, a signature Obama policy. When that money runs out this year, a request for more on top of it would be met with flat-out derision from most congressional Republicans. Increasing renewable-energy initiatives at the Pentagon can also help Obama advance his broader, national goals for transitioning the U.S. economy from fossil fuels to alternative sources. As the largest industrial consumer of energy in the world, the U.S. military can have a significant impact on energy markets - if it demands significant amounts of energy from alternative sources, it could help scale up production and ramp down prices for clean energy on the commercial market. Obama acknowledged those impacts in a speech last month at the Buckley Air Force Base in Colorado. "The Navy is going to purchase enough clean-energy capacity to power a quarter of a million homes a year. And it won't cost taxpayers a dime," Obama said. "What does it mean? It means that the world's largest consumer of energy - the Department of Defense - is making one of the largest commitments to clean energy in history," the president added. "That will grow this market, it will strengthen our energy security." Experts also hope that Pentagon engagement in clean-energy technology could help yield breakthroughs with commercial applications. Kingston acknowledged that the upfront costs for alternative fuels are higher than for conventional oil and gasoline. For example, the Air Force has pursued contracts to purchase biofuels made from algae and camelina, a grass-like plant, but those fuels can cost up to $150 a barrel, compared to oil, which is lately going for around $100 a barrel. Fuel-efficient hybrid tanks can cost $1 million more than conventional tanks - although in the long run they can help lessen the military's oil dependence, Kingston said Republicans recognize that the up-front cost can yield a payoff later. "It wouldn't be dead on arrival. But we'd need to see a two- to three-year payoff on the investment," Kingston said. Military officials - particularly Navy Secretary Ray Mabus, who has made alternative energy a cornerstone of his tenure - have been telling Congress for years that the military's dependence on fossil fuels puts the troops - and the nation's security - at risk. Mabus has focused on meeting an ambitious mandate from a 2007 law to supply 25 percent of the military's electricity from renewable power sources by 2025. (Obama has tried and failed to pass a similar national mandate.) Last June, the DOD rolled out its first department-wide energy policy to coalesce alternative and energy-efficient initiatives across the military services. In January, the department announced that a study of military installations in the western United States found four California desert bases suitable to produce enough solar energy - 7,000 megawatts - to match seven nuclear power plants. And so far, those **moves have met with approval from congressional Republicans**. Even so, any request for new Pentagon spending will be met with greater scrutiny this year. The Pentagon's budget is already under a microscope, due to $500 billion in automatic cuts to defense spending slated to take effect in 2013. But even with those challenges, clean-energy spending probably won't stand out as much in the military budget as it would in the Energy Department budget. Despite its name, the Energy Department has traditionally had little to do with energy policy - its chief portfolio is maintaining the nation's nuclear weapons arsenal. Without the stimulus money, last year only $1.9 billion of Energy's $32 billion budget went to clean-energy programs. A spending increase of just $1 billion would make a big difference in the agency's bottom line. But it would probably be easier to tuck another $1 billion or $2 billion on clean-energy spending into the Pentagon's $518 billion budget. Last year, the Pentagon spent about $1 billion on renewable energy and energy-efficiency programs across its departments.

#### Obama will use 14th amendment authority to prevent impact

Kuttner 1/2 Robert Kuttner is co-founder and co-editor of The American Prospect, as well as a distinguished senior fellow of the think tank Demos. He was a longtime columnist for Business Week and continues to write columns in The Boston Globe. “The Endless Cliff,” 2013, http://prospect.org/article/endless-cliff

What can we expect going forward?¶ President Obama, having discovered that toughness works better than premature conciliation, took a very hard line last night on the issue of the debt ceiling. Coming into the White House briefing room shortly after the House vote, he declared, “While I will negotiate over many things, I will not have another debate with Congress over whether they should pay the bills they’ve already racked up … .”¶ This, presumably, means that Obama, if necessary, will invoke his authority under the Fourteenth Amendment, which declares that debts of the United States shall not be questioned. It was not until the World War I era that the ritual of approving a debt ceiling was even asserted by Congress. This is a position long urged on Obama by Bill Clinton.

#### Winners win

Marshall and Prins 11 (BRYAN W, Miami University and BRANDON C, University of Tennessee & Howard H. Baker, Jr. Center for Public Policy, “Power or Posturing? Policy Availability and Congressional Influence on U.S. Presidential Decisions to Use Force”, Sept, Presidential Studies Quarterly 41, no. 3)

Presidents rely heavily on Congress in converting their political capital into real policy success. Policy success not only shapes the reelection prospects of presidents, but it also builds the president’s reputation for political effectiveness and fuels the prospect for subsequent gains in political capital (Light 1982). Moreover, the president’s legislative success in foreign policy is correlated with success on the domestic front. On this point, some have largely disavowed the two-presidencies distinction while others have even argued that foreign policy has become a mere extension of domestic policy (Fleisher et al. 2000; Oldfield and Wildavsky 1989) Presidents implicitly understand that there exists a linkage between their actions in one policy area and their ability to affect another. The use of force is no exception; in promoting and protecting U.S. interests abroad, presidential decisions are made with an eye toward managing political capital at home (Fordham 2002).

#### No impact to the debt ceiling---it’s exaggerated

Fisher Investments 12/10 (Fisher Investments is an independent investment adviser serving both individual and institutional investors, 12/10/12, Debt Ceiling Worries Are Overblown: Opinion, www.thestreet.com/story/11787447/1/debt-ceiling-worries-are-overblown-opinion.html)

The debt ceiling debate seems to have returned from the dead. But as our boss Ken Fisher has said, what many folks miss is that the debt ceiling is a purely political (and arbitrary) machination. And it's one that members of Congress aren't terribly motivated to fix, so it's unlikely to kick the bucket anytime soon.¶ For context, Congress used to have to approve debt issuance, but during World War I, lawmakers feared such a mundane task might slow potential war funding. Hence, they created the debt ceiling in 1917 to (try to) take themselves out of the picture.¶ Noble enough! But the limit was arbitrary and didn't account for debt's tendency to grow in sympathy with the broader economy. Hence, over time and as the country grew, our debt rose as well, butting up against Congress's arbitrary ceiling.¶ Congress mostly rubber-stamped debt ceiling increases until the mid-1950s, when lawmakers began using the debt ceiling as a political tool to leverage concessions from a president and/or the opposing party by threatening a government shutdown and a potential debt default.¶ This political gamesmanship has occurred over and over. Often the deliberations go down to the wire (or even a bit beyond) before a new ceiling is established. In fact, the debt ceiling has been lifted 91 times in the last 40 years. No politician wants to be tainted with causing the U.S. to default. Yet, at the same time, neither party wants to give up this potential battering ram. Hence, we likely will continue to have debt ceilings, debt ceiling debates and half-hearted "solutions" for "solving" the debt ceiling dilemma.¶ One such solution we've heard in recent years is minting a $1 trillion platinum coin, as explained in a post at AEIdeas, the public policy blog of the American Enterprise Institute.¶ At CNN, Jack M. Balkin wrote, "some commentators have suggested that the Treasury create two $1 trillion coins, deposit them in its account in the Federal Reserve and write checks on the proceeds."¶ That is ... one ... (theoretical) option. Yet we'd hasten to add it's entirely unnecessary and likely comes with unintended costs of its own. There is, after all, no such thing as a free lunch.¶ But beyond that, this theoretical $1 trillion platinum coin (and why must we use platinum, by the way?) is merely another arbitrary measure on top of the already arbitrary debt ceiling -- a Band-Aid on top of a Band-Aid.¶ Imagine for a moment that the Treasury does authorize creating and stashing a $1 trillion coin at the Fed. Failing a congressional debt ceiling lift, the government would issue new checks against the coin ad nausem until ... it reached the $1 trillion limit. But then perhaps Treasury would add another $1 trillion coin, and so forth and so on.¶ This merely would create a temporary bypass to the debt ceiling that likely would need to be revisited as the economy continues growing (as it always has, in fits and starts). Make no mistake: We're not fans of ever-increasing relative debt (mostly because we prefer smaller government relative to the private sector). But the absolute amount of debt pretty much has always grown and likely will continue to do so. (The government never repaid all the WW II-related borrowings after the war ended, yet a slower debt growth rate combined with economic growth reduced the size of debt relative to GDP).¶ We just think a debt ceiling serves little purpose outside of creating a periodic opportunity for political posturing. And remember, since 1921, Congress has been required to develop and pass a budget that ultimately determines what the nation spends in a given fiscal year. The Treasury merely issues debt to cover differences between government expenses and revenue.¶ Our bet is pols fold like they have 11 times in the last decade and find compromises to raise the debt ceiling again. But we'd be remiss if we didn't address the economic consequences if the government doesn't lift the ceiling before borrowings hit the $16.4 trillion debt ceiling as projected in February 2013. Those consequences, at least in the near term, aren't catastrophic.¶ The government need only delay some nonessential spending or shut down some services, such as national parks or passport issuance. At only 1.4% of GDP (as of 2011), debt service costs are tiny and likely easily paid by revenues (only 9.9% of total tax revenue in 2011, according to the White House Office of Management and Budget.) So the likelihood of default is also exceedingly low. And of course, it's probably also likely that the government finds some extra cash in the sofa cushions or a $20 bill in the laundry, buying further time for Congress to find resolution.¶ The debt ceiling is so arbitrary and so lacking in real, economic impact that you just don't need to spend the time conjuring schemes like trillion-dollar coins, Fed vaults and check writing. Given time, politicians are highly likely to do what they've nearly always done: Politick to the last moment, then raise the debt ceiling.

#### SMR expansion solves growth

MSCR 11 US Department of Commerce International Trade Administration Manufacturing and Services Competitiveness Report, February 2011, “The Commercial Outlook for U.S. Small Modular Nuclear Reactors”, http://trade.gov/mas/ian/build/groups/public/@tg\_ian/@nuclear/documents/webcontent/tg\_ian\_003185.pdf

A primary advantage of SMRs is in their production. Their small size means that they do not need the ultra-heavy forged components that currently can be made only by Japan Steel Works and Doosan Heavy Industries in South Korea.7 In most of the current U.S. SMR designs, the reactor pressure vessels and other large forgings could be supplied by domestic vendors, which would create U.S. jobs and potential exports of SMR components to international customers. In addition, most SMR designs allow for factory manufacturing, which could potentially provide opportunities for cost savings, for increased quality, and for more efficient production. Those attributes mean that SMRs could be a significant source of economic growth in the United States.

### ASAT Attack Causes Econ Collapse

#### ASAT attack crushes the global economy

Easton 9, Research Affiliate at the Project 2049 Institute, former researcher for the Asia Bureau of Defense News, June 24, The Great Game in Space, Ian Easton, http://project2049.net/documents/china\_asat\_weapons\_the\_great\_game\_in\_space.pdf

Many specialists also argue that aside from the U.S. military dependency on orbital space, the U.S. economy, and in turn, much of the world economy, is also rapidly becoming dependent on space-based systems. They posit that, in effect, the U.S. is now a “space faring” nation whose very way of life is tied to the myriad capabilities provided by the orbital space medium. ¶ War games conducted as part of U.S. national security protocols, such as the Army-After-Next, Navy Global and Air Force Global Engagement series, Space Game 2 and Schriever 1 & 2, as well as the privately conducted “DEADSATS” war games, conducted from the late 1990s and the early 2000s, confirm this view. According to some space experts who were intimately involved with the war games, the exercises exposed “a critical national Achilles heel that politicians, economists and corporate CEOs have largely ignored…losses in space can quickly affect the economic, social, and national security fabric not only of the United States, but of the entire world.” These experts further speculate that “large military powers,” such as the United States, could “be held hostage by the unknowns inherent in a new kind of war.”36 These concerns are directly linked with China’s ASAT weapons and their potential applicability in any future U.S.-Sino conflict. A more recent war game, “Pacific Vision,” conducted by Pacific Air Forces (PACAF) underscored the vulnerability of the unprotected commercial communication satellite channels on which the Air Force relies, as well as its cyber and radar vulnerabilities to Chinese attack.37

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### DoD Procurement Key

#### R&D is important but not sufficient---DOD lead move key

Matt Stepp et al. 11, specialist in clean energy innovation at the Information Technology and Innovation Foundation, formerly Fellow at the Breakthrough Institute, et al, May 2011, “Ten Principles for Creating a New U.S. Clean Energy Policy,” http://www.itif.org/files/2011-guiding-principles.pdf

R&D is fundamentally the most important part of an effective clean energy innovation policy. But by itself it is not enough. Spurring clean energy innovation means supporting innovation from the back-end (basic science and R&D) through the front-end (testing, demonstration, deployment, and commercialization). Clean energy policy should support a robust innovation system from beginning to end, ensuring that all stages of technology development are optimally sustained.¶ Clean energy innovation includes bridging technologies across the “valleys of death.” The first valley of death – the phase in development between R&D and prototyping the first generation of a technology – is crucially important because it takes the innovation out of the lab and proves its commercial viability. But building the first prototype of a radically new solar installation or demonstrating a new small modular nuclear reactor is capital intensive and risky. Because of this, the private sector has historically provided little support for this stage of development and would rather wait until new technologies yield a higher rate of return. So the federal government has played a significant role in developing many of the last century’s breakthrough technologies through demonstration and test-bed projects. Past breakthrough technologies like the Internet, nuclear power plants, and jet engines were initially built and tested at federal labs and through private sector collaborations with the military. Currently, the United States is just beginning to implement strategies for bridging technologies from the lab to demonstration, such as through the agreement between ARPA-E and the Department of Defense to test advanced energy technologies suitable for the militaries needs. But these policies are not permanent, as they are enforced at the agency level without a national strategy or Congressional mandate.¶ The second valley of death is the phase in development between tech demonstration and commercialization. 12 Clean energy must compete in an entrenched energy sector filled with significant institutional, political, and regulatory barriers to deployment. But it’s expensive to produce the first generation of technology after development and demonstration, making it a risky and potentially costly business decision for utilities and consumers. Clean energy may need up-front financing to build the first generation of new clean energy technologies and to hurdle barriers to deployment. Without it, the high cost of up-front investment is a significant deterrent for utilities to choose brand new advanced solar, wind, or small modular reactors (SMRs) over well established coal or natural gas plants. New clean energy is stuck in what Coalition for Green Capital’s Ken Berlin calls, “the chick and egg problem.” 13 Breakthrough clean energy needs first-generation investment after demonstration and testing in order to evolve into lower cost, better understood secondand third-generation tech. But utilities and consumers will only invest in breakthrough tech with greater cost and market certainty. The federal government can and should play a role in supporting this transition or what leading clean energy policy expert Bill Bonvillian calls “beefing up the back end of clean energy.” 14 This is different than simply subsidizing deployment of existing mature clean energy technologies with little hope for dramatic price reductions of next generation innovations.

## MOX DA

### Impact

#### No rapid prolif---dangerous states are terrible at proliferating

Jacques E.C. Hymans 12, Assistant Professor in the School of International Relations at the University of Southern California, 4/16/12, “North Korea's Lessons for (Not) Building an Atomic Bomb,” http://www.foreignaffairs.com/print/134657

The dismal failure of North Korea's April 13 long-range missile test -- it broke into pieces after 81 seconds [1] of flight time -- has also exposed the poverty of standard proliferation analyses. In the days leading up to the test, most commentators apparently took Pyongyang's technological forward march for granted. Even the more sober voices [2] evinced little doubt that this test would go at least as well as the country's 2009 effort, which managed to put a rocket into flight for about fifteen minutes before it malfunctioned. Meanwhile, other technical experts regaled readers with tales of the "emerging" [3] bona fide North Korean intercontinental ballistic missile [4]force, which might soon be able to target the continental United States. And there were renewed calls for the United States and its East Asian allies to embrace the "Israeli option" [5]: pre-emptive military strikes against North Korean strategic weapons facilities. The actual results of the test, however, demonstrate that the analysts' nightmare scenarios were hardly more credible than North Korea's own propaganda volleys.

To be sure, a single technical failure need not condemn an entire strategic weapons program. Pyongyang's missile mishap, however, was not a lone failure; it was merely the latest in a long line of botched strategic weapons tests. The country's long-range missile test record [7] is frankly pathetic: a total failure in 2006, a partial failure in 2009, and a total failure in 2012. (A 1998 test of a medium-range missile that had been jerry-rigged to fly a longer distance was also a partial failure.) And its nuclear test record is almost as bad: a virtual fizzle [8] in 2006, and a very modest blast at best [9] in 2009.

Amazingly, the assumption that Pyongyang already owns the very weapons that it has consistently failed to demonstrate has long driven U.S. policy. The Clinton administration's North Korea diplomacy was based on the belief that there was a "better than even chance" [10] that Pyongyang had built the bomb. The George W. Bush administration then ripped up the Clinton-era policy because it thought that the North Koreans had cheated [11] and built even more bombs than Clinton realized. Most recently, Secretary of State Hillary Clinton has gone so far as to state that "we know" [12] that Pyongyang possesses "between one and six nuclear weapons," creating the impression that new leader Kim Jong Un could give the order to take out Seoul or Tokyo at any time. Given Washington's blind certainty about the North Korean menace, it is little wonder that few analysts anticipated its latest belly flop.

Washington's miscalculation is not just a product of the difficulties of seeing inside the Hermit Kingdom. It is also a result of the broader tendency to overestimate the pace of global proliferation. For decades, Very Serious People have predicted [13] that strategic weapons are about to spread to every corner of the earth. Such warnings have routinely proved wrong -

- for instance, the intelligence assessments that led to the 2003 invasion of Iraq -- but they continue to be issued. In reality, despite the diffusion of the relevant technology and the knowledge for building nuclear weapons, the world has been experiencing a great proliferation slowdown. Nuclear weapons programs around the world are taking much longer to get off the ground -- and their failure rate is much higher -- than they did during the first 25 years of the nuclear age.

As I explain in my article "Botching the Bomb [14]" in the upcoming issue of Foreign Affairs, the key reason for the great proliferation slowdown is the absence of strong cultures of scientific professionalism in most of the recent crop of would-be nuclear states, which in turn is a consequence of their poorly built political institutions. In such dysfunctional states, the quality of technical workmanship is low, there is little coordination across different technical teams, and technical mistakes lead not to productive learning but instead to finger-pointing and recrimination. These problems are debilitating, and they cannot be fixed simply by bringing in more imported parts through illicit supply networks. In short, as a struggling proliferator, North Korea has a lot of company.

#### This is a global trend that conclusively disproves the “fast prolif” thesis

Jacques E.C. Hymans 12, Assistant Professor in the School of International Relations at the University of Southern California, May/June 2012, “Botching the Bomb,” Foreign Affairs, Vol. 91, No. 3

THE CHRONIC problem of nuclear proliferation is once again dominating the news. A fierce debate has developed over how to respond to the threat posed by Iran's nuclear activities, which most experts believe are aimed at producing a nuclear weapon or at least the capacity to assemble one. In this debate, one side is pushing for a near-term military attack to damage or destroy Iran's nuclear program, and the other side is hoping that strict sanctions against the Islamic Republic will soften it up for a diplomatic solution. Both sides, however, share the underlying assumption that unless outside powers intervene in a dramatic fashion, it is inevitable that Iran will achieve its supposed nuclear goals very soon.

Yet there is another possibility. The Iranians had to work for 25 years just to start accumulating uranium enriched to 20 percent, which is not even weapons grade. The slow pace of Iranian nuclear progress to date strongly suggests that Iran could still need a very long time to actually build a bomb –

 or could even ultimately fail to do so. Indeed, global trends in proliferation suggest that either of those outcomes might be more likely than Iranian success in the near future. Despite regular warnings that proliferation is spinning out of control, the fact is that since the 1970s, there has been a persistent slowdown in the pace of technical progress on nuclear weapons projects and an equally dramatic decline in their ultimate success rate.

The great proliferation slowdown can be attributed in part to U.S. and international nonproliferation efforts. But it is mostly the result of the dysfunctional management tendencies of the states that have sought the bomb in recent decades. Weak institutions in those states have permitted political leaders to unintentionally undermine the performance of their nuclear scientists, engineers, and technicians. The harder politicians have pushed to achieve their nuclear ambitions, the less productive their nuclear programs have become. Meanwhile, military attacks by foreign powers have tended to unite politicians and scientists in a common cause to build the bomb. Therefore, taking radical steps to rein in Iran would be not only risky but also potentially counterproductive, and much less likely to succeed than the simplest policy of all: getting out of the way and allowing the Iranian nuclear program's worst enemies -- Iran's political leaders -- to hinder the country's nuclear progress all by themselves.