# 1AC- UCO DV 1NC – Uranium DA, Solar PPA CP (ADV CP to Grid), T, Cap, Case

#### Plan: The United States Department of Defense should procure small modular reactors for use on military bases in the United States.

### Advantage 1 is islanding

#### Current DOD efforts at getting off the grid fail because of lack of coordination.

GAO ‘09

(Government Accountability Office, “Defense Critical Infrastructure:” <http://www.gao.gov/assets/300/297169.html>, SEH)

**DOD's** most critical assets are vulnerable to disruptions in electrical ¶ power supplies, but DOD lacks sufficient information to determine the ¶ full extent of the risks and vulnerabilities these assets face. **All** 34 ¶ **of these most critical assets require electricity continuously to** ¶ **support their military missions**, and 31 of them rely on commercial ¶ power grids--which the Defense Science Board Task Force on DOD Energy ¶ Strategy has characterized as increasingly fragile and vulnerable--as ¶ their primary source of electricity. DOD Instruction 3020.45 requires ¶ DOD to conduct vulnerability assessments on all its most critical ¶ assets at least once every 3 years. Also, ASD(HD&ASA) has requested the ¶ U.S. Army Corps of Engineers--which serves as the Defense Critical ¶ Infrastructure Program's Defense Infrastructure Sector Lead Agent for ¶ Public Works--to conduct preliminary technical analyses of DOD ¶ installation infrastructure (including electrical power infrastructure) ¶ to support the teams conducting Defense Critical Infrastructure Program ¶ vulnerability assessments on the most critical assets. ¶ \* As of June 2009, and according to ASD(HD&ASA) and the Joint Staff, ¶ DOD had conducted Defense Critical Infrastructure Program vulnerability ¶ assessments on 14 of the 34 most critical assets.[Footnote 18] **DOD has** ¶ **not conducted the remaining assessments** because it did not identify the ¶ most critical assets until October 2008. To comply with the ¶ instruction, DOD would have to complete Defense Critical Infrastructure ¶ Program vulnerability assessments on all most critical assets by ¶ October 2011. ¶ \* **DOD has neither conducted, nor developed additional guidelines and** ¶ **time frames for conducting, these vulnerability assessments on any of** ¶ **the five non-DOD-owned most critical assets located in the United** ¶ **States or foreign countries,** citing security concerns and political ¶ sensitivities. ¶ \* **The U.S. Army Corps of Engineers has not completed the preliminary** ¶ **technical analyses requested because it has not yet received** ¶ **infrastructure-related information regarding the networks, assets,** ¶ **points of service, and inter-and intradependencies related to** ¶ **electrical power systems that it requires from the military services.** ¶ \* **Although DOD is in the process of developing guidelines, it does not** ¶ **systematically coordinate Defense Critical Infrastructure Program** ¶ **vulnerability assessment processes and guidelines with those of other,** ¶ **complementary DOD mission assurance programs--including force** ¶ **protection; antiterrorism; information assurance; continuity of** ¶ **operations; chemical, biological, radiological, nuclear, and high-** ¶ **explosive defense; readiness; and installation preparedness**--that also ¶ examine electrical power vulnerabilities of the most critical assets, ¶ because DOD has not established specific guidelines for such systematic ¶ coordination. ¶ \* The 10 Defense Critical Infrastructure Program vulnerability ¶ assessments we reviewed did not explicitly consider assets' ¶ vulnerabilities to longer-term (i.e., of up to several weeks' duration) ¶ electrical power disruptions[Footnote 19] on a mission-specific basis, ¶ as DOD has not developed explicit Defense Critical Infrastructure ¶ Program benchmarks for assessing electrical power vulnerabilities ¶ associated with longer-term electrical power disruptions. ¶ With more comprehensive knowledge of the most critical assets' risks ¶ and vulnerabilities to electrical power disruptions, DOD can better ¶ avoid compromising crucial DOD-wide missions during electrical power ¶ disruptions. This additional information may also improve DOD's ability ¶ to effectively prioritize funding needed to address identified risks ¶ and vulnerabilities of its most critical assets to electrical power ¶ disruptions. ¶ **While DOD has taken some steps toward assuring the availability of its** ¶ **electrical power supplies to its most critical assets, it lacks a** ¶ **mechanism for tracking the implementation of future Defense Critical** ¶ **Infrastructure Program risk management decisions and responses, and its** ¶ **coordination with local electricity providers has been limited**. From ¶ August 2005 through October 2008, DOD issued Defense Critical ¶ Infrastructure Program guidance for identifying critical assets, ¶ assessing their vulnerabilities, and making risk management decisions ¶ about those vulnerabilities. In addition, DOD has conducted various ¶ types of vulnerability assessments--including Defense Critical ¶ Infrastructure Program vulnerability assessments, Joint Staff ¶ Integrated Vulnerability Assessments, and other mission assurance- ¶ related assessments--on 24 of the most critical assets, including ¶ multiple assessments on some of the same assets. According to the ¶ survey, these Defense Critical Infrastructure Program and other DOD ¶ vulnerability assessments have identified various electrical power ¶ vulnerabilities for 10 of the assets. DOD has also coordinated with ¶ other federal agencies--including DHS, DOE, and the Federal Energy ¶ Regulatory Commission--and industry organizations in an effort intended ¶ to assure the availability of electrical power supplies to the most ¶ critical assets. **However, ASD(**HD&ASA)--which has responsibility for ¶ overseeing the implementation of actions for the remediation, ¶ mitigation, or acceptance of risks to DOD critical assets--**has not yet** ¶ **developed a mechanism to track the implementation of future Defense** ¶ **Critical Infrastructure Program risk management decisions, along with** ¶ **responses intended to address risks and vulnerabilities identified for** ¶ **the most critical assets. Without such information, DOD cannot** ¶ **comprehensively determine whether asset owners are taking the necessary** ¶ **steps to address identified risks and vulnerabilities of all of the** ¶ **most critical assets to electrical power disruptions**. In addition, ¶ Defense Critical Infrastructure Program guidance encourages ¶ coordination between DOD installations with critical assets and their ¶ respective public utilities, including electricity providers, in order ¶ to remediate risks involving those utilities--for example, by ¶ discussing potential changes in service agreements with those ¶ utilities. However, according to our survey results, such coordination ¶ with local electricity providers has occurred for only 7 of DOD's 34 ¶ most critical assets. As a result, DOD may not be taking advantage of ¶ available expertise on electrical power issues from such providers. ¶ **Without increased coordination between more DOD installations with** ¶ **critical assets and their respective local electricity providers, DOD** ¶ **potentially limits the risk mitigation or remediation options available** ¶ **to it for addressing the vulnerabilities of its most critical assets to** ¶ **electrical power disruptions.**

#### Grid disruptions are inevitable- only SMR’s can solve

Robitaille 12

(George, Department of Army Civilian, United States Army War College, “Small Modular Reactors: The Army’s Secure Source of Energy?” 21-03-2012, Strategy Research Project)

In recent years, the U.S Department of Defense (DoD) has identified a security issue at our installations related to the dependence on the civilian electrical grid. 1 The DoD depends on a steady source of electricity at military facilities to perform the functions that secure our nation. The flow of electricity into military facilities is controlled by a public grid system that is susceptible to being compromised because of the age of the infrastructure, damage from natural disasters and the potential for cyber attacks. Although most major functions at military installations employ diesel powered generators as temporary backup, the public grid may not be available to provide electricity when it is needed the most. The United States electrical infrastructure system is prone to failures and susceptible to terrorist attacks. 2 It is critical that the source of electricity for our installations is reliable and secure. In order to ensure that our military facilities possess a secure source of electricity, either the public system of electric generation and distribution is upgraded to increase its reliability as well as reducing its susceptibility to cyber attack or another source of electricity should be pursued. Although significant investments are being made to upgrade the electric grid, the current investment levels are not keeping up with the aging system. Small modular reactors (SMRs) are nuclear reactors that are about an order of magnitude smaller than traditional commercial reactor used in the United States. SMRs are capable of generating electricity and at the same time, they are not a significant contributor to global warming because of green house gas emissions. The DoD needs to look at small modular nuclear reactors (SMRs) to determine if they can provide a safe and secure source of electricity. Electrical Grid Susceptibility to Disruptions According to a recent report by the Defense Science Board, the DoD gets ninety nine percent of their electrical requirements from the civilian electric grid. 3 The electric grid, as it is currently configured and envisioned to operate for the foreseeable future, may not be reliable enough to ensure an uninterrupted flow of electricity for our critical military facilities given the influences of the aging infrastructure, its susceptibility to severe weather events, and the potential for cyber attacks. The DoD dependency on the grid is reflected in the $4.01 Billion spent on facilities energy in fiscal year 2010, the latest year which data was available. 4 The electricity used by military installations amounts to $3.76 billion. 5 As stated earlier, the DoD relies on the commercial grid to provide a secure source of energy to support the operations that ensure the security of our nation and it may not be available when we need it. The system could be taken down for extended periods of time by failure of aging components, acts of nature, or intentionally by cyber attacks. Aging Infrastructure. The U.S electric power grid is made up of independently owned power plants and transmission lines. The political and environmental resistance to building new electric generating power plants combined with the rise in consumption and aging infrastructure increases the potential for grid failure in the future. There are components in the U.S. electric grid that are over one hundred years old and some of the recent outages such as the 2006 New York blackout can be directly attributed to this out of date, aging infrastructure. 6 Many of the components of this system are at or exceeding their operational life and the general trend of the utility companies is to not replace power lines and other equipment until they fail. 7 The government led deregulation of the electric utility industry that started in the mid 1970s has contributed to a three decade long deterioration of the electric grid and an increased state of instability. Although significant investments are being made to upgrade the electric grid, the many years of prior neglect will require a considerable amount of time and funding to bring the aging infrastructure up to date. Furthermore, the current investment levels to upgrade the grid are not keeping up with the aging system. 8 In addition, upgrades to the digital infrastructure which were done to increase the systems efficiency and reliability, have actually made the system more susceptible to cyber attacks. 9 Because of the aging infrastructure and the impacts related to weather, the extent, as well as frequency of failures is expected to increase in the future. Adverse Weather. According to a 2008 grid reliability report by the Edison Electric Institute, sixty seven per cent of all power outages are related to weather. Specifically, lightning contributed six percent, while adverse weather provided thirty one percent and vegetation thirty percent (which was predominantly attributed to wind blowing vegetation into contact with utility lines) of the power outages. 10 In 1998 a falling tree limb damaged a transformer near the Bonneville Dam in Oregon, causing a cascade of related black-outs across eight western states. 11 In August of 2003 the lights went out in the biggest blackout in North America, plunging over fifty million people into darkness over eight states and two Canadian provinces. Most areas did not have power restored four or five days. In addition, drinking water had to be distributed by the National Guard when water pumping stations and/or purification processes failed. The estimated economic losses associated with this incident were about five billion dollars. Furthermore, this incident also affected the operations of twenty two nuclear plants in the United States and Canada. 12 In 2008, Hurricane Ike caused approximately seven and a half million customers to lose power in the United States from Texas to New York. 13 The electric grid suffered numerous power outages every year throughout the United States and the number of outages is expected to increase as the infrastructure ages without sufficient upgrades and weather-related impacts continue to become more frequent. Cyber Attacks. The civilian grid is made up of three unique electric networks which cover the East, West and Texas with approximately one hundred eighty seven thousand miles of power lines. There are several weaknesses in the electrical distribution infrastructure system that could compromise the flow of electricity to military facilities. The flow of energy in the network lines as well as the main distribution hubs has become totally dependent on computers and internet-based communications. Although the digital infrastructure makes the grid more efficient, it also makes it more susceptible to cyber attacks. Admiral Mr. Dennis C. Blair (ret.), the former Director of National Intelligence, testified before Congress that “the growing connectivity between information systems, the Internet, and other infrastructures creates opportunities for attackers to disrupt telecommunications, electrical power, energy pipelines, refineries, financial networks, and other critical infrastructures. 14 ” The Intelligence Community assesses that a number of nations already have the technical capability to conduct such attacks. 15 In the 2009 report, Annual Threat Assessment of the Intelligence Community for the Senate Armed Services Committee, Adm. Blair stated that “Threats to cyberspace pose one of the most serious economic and national security challenges of the 21st Century for the United States and our allies.”16 In addition, the report highlights a growing array of state and non-state actors that are targeting the U.S. critical infrastructure for the purpose of creating chaos that will subsequently produce detrimental effects on citizens, commerce, and government operations. These actors have the ability to compromise, steal, change, or completely destroy information through their detrimental activities on the internet. 17 In January 2008, US Central Intelligence Agency senior analyst Tom Donahue told a gathering of three hundred international security managers from electric, water, oil & gas, and other critical industry, that data was available from multiple regions outside the United States, which documents cyber intrusions into utilities. In at least one case (outside the U.S.), the disruption caused a power outage affecting multiple cities. Mr. Donahue did not specify who executed these attacks or why, but did state that all the intrusions were conducted via the Internet. 18 During the past twenty years, advances in computer technologies have permeated and advanced all aspects of our lives. Although the digital infrastructure is being increasingly merged with the power grid to make it more efficient and reliable, it also makes it more vulnerable to cyber attack. In October 2006, a foreign hacker invaded the Harrisburg, PA., water filtration system and planted malware. 19 In June 2008, the Hatch nuclear power plant in Georgia shut down for two days after an engineer loaded a software update for a business network that also rebooted the plant's power control system. In April 2009, The Wall Street Journal reported that cyber spies had infiltrated the U.S. electric grid and left behind software that could be used to disrupt the system. The hackers came from China, Russia and other nations and were on a “fishing expedition” to map out the system. 20 According to the secretary of Homeland Security, Janet Napolitano at an event on 28 October 2011, cyber–attacks have come close to compromising the country’s critical infrastructure on multiple occasions. 21 Furthermore, during FY11, the United States Computer Emergency Readiness Team took action on more than one hundred thousand incident reports by releasing more than five thousand actionable cyber security alerts and information products. 22 The interdependence of modern infrastructures and digital based systems makes any cyber attacks on the U.S. electric grid potentially significant. The December 2008 report by the Commission on Cyber Security for the forty fourth Presidency states the challenge plainly: “America’s failure to protect cyberspace is one of the most urgent national security problems facing the new administration”. 23 The susceptibility of the grid to being compromised has resulted in a significant amount of resources being allocated to ensuring the systems security. Although a substantial amount of resources are dedicated to protecting the nation’s infrastructure, it may not be enough to ensure the continuous flow of electricity to our critical military facilities. SMRs as they are currently envisioned may be able to provide a secure and independent alternative source of electricity in the event that the public grid is compromised. SMRs may also provide additional DoD benefit by supporting the recent government initiatives related to energy consumption and by circumventing the adverse ramifications associated with building coal or natural gas fired power plants on the environment.

#### Al Qaeda can and will pull off a cyber-attack – Al Qaeda video proves

Cloherty ‘12

(Jack Cloherty is the lead producer for the Justice Department/Homeland Security beat at World News. “Virtual Terrorism: Al Qaeda Video Calls for 'Electronic Jihad'” May 22, 2012 accessed online September 15, 2012 at http://abcnews.go.com/Politics/cyber-terrorism-al-qaeda-video-calls-electronic-jihad/story?id=16407875#.UFS0p42PVe-, TSW)

Al Qaeda may be turning its destructive attention to cyber-warfare against the United States. In a chilling video, an al Qaeda operative calls for "electronic jihad" against the United States, and compares vulnerabilities in vital American computer networks to the flaws in aviation security before the 9/11 attack.¶ The al Qaeda video calls upon the "covert mujahidin" to launch cyber attacks against the U.S. networks of both government and critical infrastructure, including the electric grid. The video was obtained by the FBI last year, and released today by the Senate Committee on Homeland Security and Governmental Affairs.¶ "This is the clearest evidence we've seen that al Qaeda and other terrorist groups want to attack the cyber systems of our critical infrastructure," Homeland Security and Governmental Affairs Committee Chairman Joe Lieberman, I-Conn., said in a statement.¶ "This video is troubling as it urges al Qaeda adherents to launch a cyber attack on America," said Sen. Susan Collins, R-Maine, the ranking member on the committee. "It's clear that al Qaeda is exploring all means to do us harm and this is evidence that our critical infrastructure is a target."¶ ¶ Dept. of Homeland Security¶ In this screenshot obtained by the FBI, an Al... View Full Size¶ ¶ If Israel Attacks Iran Watch Video¶ The national security community says the threat of cyber attack is real, and the gap between terrorist aspirations and capability is closing. The senior intelligence official at Cyber Command, Rear Adm. Samuel Cox, has said al Qaeda operatives are seeking the capability to stage cyber attacks against U.S. networks and terrorists could purchase the capabilities to do so from expert criminal hackers.¶ Increasing evidence also suggests that Iran is looking to commit cyber attacks against the United States, according to testimony last month before the House Committee on Homeland Security. Iran's sponsorship of terrorist groups takes on a new dimension in cyberspace, where it could develop a powerful cyber weapon and pass it on to a terrorist group..¶ Lieberman is using the al Qaeda video to underline what he says is the need for new legislation..¶ "Congress needs to act now to protect the American public from a possible devastating attack on our electric grid, water delivery systems, or financial networks," he said. "As numerous, bipartisan national security experts have said, minimum cyber security standards for those networks are necessary to protect our national and economic security. That is why the Senate needs to act on our bipartisan Cyber Security Act that requires minimum security performance requirements for key critical infrastructure cyber networks."¶ The Homeland Security Committee says the Department of Homeland Security received more than 50,000 reports of cyber intrusions or attempted intrusions since October, an increase of 10,000 reports over the same period the previous year.

#### Grid outage risks terrorism - takes out surveillance

Defense Science Board ‘08

(The DSB is a Federal ¶ Advisory Committee established to provide independent advice to the Secretary of ¶ Defense, “More Fight – Less Fuel” <http://www.acq.osd.mil/dsb/reports/ADA477619.pdf>, SEH)

**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.** About 85% of the energy infrastructure upon which DoD ¶ depends is commercially owned, **and 99% of the electrical energy DoD installations** ¶ **consume originates outside the fence.**¶ 3¶ As noted below, however, the grid 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. ¶ 2.3.1 State of the Grid ¶ The U.S.-Canadian electric grid is very efficient and cost effective but its design metric ¶ is efficiency more than resiliency. As a consequence, it is vulnerable to natural disaster or deliberate attack. The Task Force received several briefings from the Mission ¶ Assurance Division at Dahlgren (MAD), the Department of Energy and the utility ¶ industry. Based on these briefings, the Task Force is concerned about the condition of ¶ the grid and the ability to effect timely repairs. ¶ This concern extends not only to the complete dependency of critical national security ¶ missions on the grid, but also to its centrality to all facets of the nation’s economic life. ¶ To appreciate the seriousness of the impacts of an extended disruption, consider the ¶ 2003 Northeast blackout. At around 4:15pm EST on August 14, 2003 about 50 million ¶ people living in a 9,300 square mile area in the U.S. and Canada lost electrical power. ¶ More than 500 generating units at 265 power plants shut down during the outage, 22 of ¶ which were nuclear. Those plants took about two weeks to regain full capacity, and lost ¶ an average of more than half their capacity for 12 days. The shutdown was in part ¶ precautionary in nature. If an imbalance between load and supply occurs, power lines ¶ grow longer and sag from overheating and other hardware can fail. These imbalances ¶ can damage equipment that is hard-to-repair, requires long lead time to produce and is ¶ expensive. So, the grid quickly disconnects itself when a threatening imbalance is ¶ detected. Nuclear plants are required for safety reasons to shut down when the grid ¶ they’re connected to is de-energized.¶ 4¶ A U.S.-Canada Task Force found the main cause of the blackout to be the failure of a ¶ utility in Ohio to properly trim trees near a power line, causing the first in what became a ¶ set of cascading failures.¶ 5¶ Secretary of Energy Spencer Abraham said there would be ¶ no punishment for the utility because current U.S. law does not require electric reliability ¶ standards. However, the Energy Policy Act of 2005 (EPAct 2005) gave the Federal ¶ Energy Regulatory Commission (FERC) new authority to direct the industry to develop ¶ reliability standards. It directs FERC to designate an Electric Reliability Organization ¶ (ERO) to develop and propose reliability standards, which only after agreement by the ¶ industry become mandatory. The ERO chosen by the FERC is a volunteer, industry run ¶ organization. While FERC oversight of industry developed standards is an ¶ improvement over the previous situation, the Task Force remains concerned that FERC ¶ may be unable to reduce the risk to critical DoD missions to acceptable levels in a ¶ reasonable timeframe. ¶ **Some have argued that the August 2003 incident shows that the protections built into** ¶ **the grid worked. Within several hours electricity was restored to many areas, though a** ¶ **few areas waited nearly a week. However, the incident highlights how easily the power** ¶ **grid could be taken down. Also, quick restoration was possible because no significant** ¶ **equipment was damaged, something that might not occur in future incidents**. **Further,** ¶ **during the blackout most systems failed that would detect unauthorized border** ¶ **crossings, port landings, or unauthorized access to vulnerable sites. Future such blackouts could be exploited for terrorist activity, with potentially far more catastrophic** ¶ **results**. ¶ These risks exist elsewhere than in the U.S. For example, on September 28, 2003 Italy ¶ experienced the largest of a series of blackouts suffered through that year, affecting a ¶ total of 56 million people, and spilling into Switzerland.¶ 6¶ It was also the most serious ¶ blackout in Italy in 20 years. DoD installations located outside the continental United ¶ States (OCONUS) are dependent on the commercial grids serving their locations. ¶ Security of their power supplies and continuation of their missions is as important as ¶ within the U.S.

#### Surveillance key to stop bioterror – Characterize and effective response

NSB ‘12  
(National Strategy for Biosurveillance, July 31, 2012 Accessed online August 24, 2012 at http://www.whitehouse.gov/sites/default/files/National\_Strategy\_for\_Biosurveillance\_July\_2012.pdf)

A well-integrated, national biosurveillance enterprise is a national security imperative . Our ability to ¶ detect quickly and characterize a potential incident of national significance that affects human, animal, ¶ or plant health is of paramount importance . Rapid detection and enhanced situational awareness are ¶ critical to saving lives and improving incident outcomes, whether the result of a bioterror attack or other ¶ weapons of mass destruction (WMD) threat, an emerging infectious disease, pandemic, environmental ¶ disaster, or a food-borne illness . Beyond our need to protect domestic interests, and because health ¶ threats transcend national borders, the United States also plays a vital role within an international ¶ network of biosurveillance centers across the globe.

#### Numerous attempts prove

Wagner 9/11

(Dr. Abraham R. Wagner is a Professor of International and Public Affairs at the ¶ Arnold A. Saltzman Institute of War & Peace Studies at Columbia University. “Counter-Terrorism Technologies -- Taking Stock on 9/11” 09/11/2012 2:13 pm accessed online September 11, 2012 at <http://www.huffingtonpost.com/abraham-r-wagner/counterterrorism-technolo_b_1874521.html>, TSW)

On this 11th anniversary of the 9/11 attacks, it makes sense to take stock of where the nation has progressed in its effort to deter and combat future terrorist attacks, both at home and abroad. The 9/11 attacks came as a shock, and have rightfully come to be regarded as a major U.S. intelligence failure. In the aftermath, the nation undertook significant organizational reforms designed to enable more effective intelligence and law enforcement operations against evolving terrorist threats. The country also looked to see what science, engineering and technology could do to help addresses these threats.¶ Technology has long been the nation's strong suit. Americans tend to believe that where there is a problem, there must certainly be a solution and it most likely involves technology and money. During the decade that followed 9/11, billions of dollars were spent on a vast range of programs and technologies in the name of counter-terrorism. For the first two years after 9/11, I joined with other scientists and engineers at the Department of Defense and the Intelligence Community in efforts to identify the most promising approaches to the problem. Ultimately we found that there was no magic bullet or perfect solution to this thorny problem, but were able to suggest a range of investments that could be made to address the evolving terrorist threat.¶ An honest assessment of these investments in counter-terrorism technologies reveals that the results have been mixed -- as one might well expect. A combination of greatly improved intelligence and law enforcement personnel have employed some of the better technologies with considerable success. Indeed, some 45 terrorist plots have been stopped and others deterred. How much of this has been simply luck and how much can be traced to any new technology program is a matter of debate, and there are clearly examples of both that can be found.¶ One area where technology has made a significant contribution has been in new systems to aid in intelligence and surveillance against terrorist operations. While terrorists may hold to an eighth century ideology, they have not been reluctant to employ 21st century communications and information technologies. They have utilized the Internet and cell phones for a number of purposes, and at the time of 9/11 the nation was in need of systems to intercept and sort out terrorist communications. While highly sensitive, public disclosures about several key programs show that considerable progress has been made in this critical area, giving the intelligence agencies some key tools in locating terrorists and stopping their plots. Aside from communications intercept, a new area of "data mining" has also shown considerable promise in locating terrorists and their plots.¶ At the same time, several of key surveillance programs used for counter-terrorism have come under fire from civil liberties groups as being unconstitutional violations of the Fourth Amendment privacy protections, and others. Critics of the Bush Administration saw this as "running roughshod over the Constitution." Even now there are still federal court challenges to laws such as the 2008 FISA Amendments Act and others that have enabled counter-terrorist efforts since 9/11. Ultimately a balance needs to be struck between the essential needs for intelligence to thwart future attacks and protected privacy rights, but as yet it remains an unsettled area where the Supreme Court will need to rule at some future point in time.¶ Less controversial have been efforts over the past decade to employ new information technologies to what has been termed the Information Sharing Environment -- collaborative efforts to best utilize available intelligence and other data among the various federal, state and local agencies with counter-terrorism responsibilities. While certainly some progress has been made over the past 11 years, the net result is largely a national embarrassment, and clearly a triumph of politics over physics. The information and communications technologies are all well-developed, but multiple bureaucracies have generated a set of plans and an even larger set of excuses as to why the fundamental problems in this area remain to be solved.

#### Terrorists can obtain Bio-weapons and will use them – Syria Demise

Blair ‘12

(Charles P. Blair joined FAS in June 2010. He is the Senior Fellow on State and Non-State Threats. Born and raised in Los Alamos, New Mexico, Mr. Blair was an exchange student in Moscow in the mid-1980s, witnessing firsthand the closing salvos of the Cold War. Since the end of that era, Mr. Blair has worked on issues relating to the diffusion and diversification of weapons of mass destruction (WMD) in the context of proliferation amid the rise of mass casualty terrorism incidents and the centripetal and centrifugal elements of globalization. Mr. Blair’s work focuses on state and violent non-state actors (VNSA) – amid a dystopic and increasingly tribal world. “Fearful of a nuclear Iran? The real WMD nightmare is Syria” 1 MARCH 2012 accessed online August 22, 2012 at http://www.thebulletin.org/web-edition/op-eds/fearful-of-nuclear-iran-the-real-wmd-nightmare-syria)

As possible military action against Iran's suspected nuclear weapons program looms large in the public arena, far more international concern should be directed toward Syria and its weapons of mass destruction. When the Syrian uprising began more than a year ago, few predicted the regime of President Bashar al-Assad would ever teeter toward collapse. Now, though, the demise of Damascus's current leadership appears inevitable, and Syria's revolution will likely be an unpredictable, protracted, and grim affair. Some see similarities with Libya's civil war, during which persistent fears revolved around terrorist seizure of Libyan chemical weapons, or the Qaddafi regime's use of them against insurgents. Those fears turned out to be unfounded.¶ But the Libyan chemical stockpile consisted of several tons of aging mustard gas leaking from a half-dozen canisters that would have been impossible to utilize as weapons. Syria likely has one of the largest and most sophisticated chemical weapon programs in the world. Moreover, Syria may also possess an offensive biological weapons capability that Libya did not.¶ While it is uncertain whether the Syrian regime would consider using WMD against its domestic opponents, Syrian insurgents, unlike many of their Libyan counterparts, are increasingly sectarian and radicalized; indeed, many observers fear the uprising is being "hijacked" by jihadists. Terrorist groups active in the Syrian uprising have already demonstrated little compunction about the acquisition and use of WMD. In short, should Syria devolve into full-blown civil-war, the security of its WMD should be of profound concern, as sectarian insurgents and Islamist terrorist groups may stand poised to seize chemical and perhaps even biological weapons.¶ An enormous unconventional arsenal. Syria's chemical weapons stockpile is thought to be massive. One of only eight nations that is not a member of the Chemical Weapons Convention -- an arms control agreement that outlaws the production, possession, and use of chemical weapons -- Syria has a chemical arsenal that includes several hundred tons of blistering agents along with likely large stockpiles of deadly nerve agents, including VX, the most toxic of all chemical weapons. At least four large chemical weapon production facilities exist. Additionally, Syria likely stores its deadly chemical weapons at dozens of facilities throughout the fractious country. In contrast to Libya's unusable chemical stockpile, analysts emphasize that Syrian chemical agents are weaponized and deliverable. Insurgents and terrorists with past or present connections to the military might feasibly be able to effectively disseminate chemical agents over large populations. (The Global Security Newswire recently asserted that "[t]he Assad regime is thought to possess between 100 and 200 Scud missiles carrying warheads loaded with sarin nerve agent. The government is also believed to have several hundred tons of sarin agent and mustard gas stockpiled that could be used in air-dropped bombs and artillery shells, according to information compiled by the James Martin Center.")¶ Given its robust chemical weapons arsenal and its perceived need to deter Israel, Syria has long been suspected of having an active biological weapons program. Despite signing the Biological Weapons and Toxins Convention in 1972 (the treaty prohibits the development, production, and stockpiling of biological and toxin weapons), Syria never ratified the treaty. Some experts contend that any Syrian biological weapons program has not moved beyond the research and development phase. Still, Syria's biotechnical infrastructure undoubtedly has the capability to develop numerous biological weapon agents. After Israel destroyed a clandestine Syrian nuclear reactor in September 2007, Damascus may have accelerated its chemical and biological weapons programs.¶ It's hard to guard WMD when a government collapses. Although the United States and its allies are reportedly monitoring Syria's chemical weapons, recent history warns that securing them from theft or transfer is an extraordinary challenge. For example, during Operation Iraqi Freedom, more than 330 metric tons of military-grade high explosives vanished from Iraq's Al-Qaqaa military installation. Almost 200 tons of the most powerful of Iraq's high-explosives, HMX -- used by some states to detonate nuclear weapons -- was under International Atomic Energy Agency seal. Many tons of Al-Qaqaa's sealed HMX reportedly went missing in the early days of the war in Iraq. Forensic tests later revealed that some of these military-grade explosives were subsequently employed against US and coalition forces.¶ Even with a nationwide presence of 200,000 coalition troops, several other sensitive military sites were also looted, including Iraq's main nuclear complex, Tuwaitha. Should centralized authority crumble in Syria, it seems highly unlikely that the country's 50 chemical storage and manufacturing facilities -- and, possibly, biological weapon repositories -- can be secured. The US Defense Department recently estimated that it would take more than 75,000 US military personnel to guard Syria's chemical weapons. This is, of course, if they could arrive before any WMD were transferred or looted -- a highly unlikely prospect.¶ Complicating any efforts to secure Syria's WMD, post-Assad, are its porous borders. With Syria's government distracted by internal revolt and US forces now fully out of Iraq, it is plausible that stolen chemical or biological weapons could find their way across the Syrian border into Iraq. Similarly, Syrian WMD could be smuggled into southern Turkey, Jordan, Lebanon, the West Bank, Israel, and, potentially, the United States and Europe.¶ At least six formal terrorist organizations have long maintained personnel within Syria. Three of these groups -- Hamas, Hizbollah, and Palestinian Islamic Jihad -- have already attempted to acquire or use chemical or biological agents, or both. Perhaps more troubling, Al Qaeda-affiliated fighters from Iraq have streamed into Syria, acting, in part, on orders from Al Qaeda leader Ayman al-Zawahiri. In the past, Al Qaeda-in-Iraq fighters attempted to use chemical weapons, most notably attacks that sought to release large clouds of chlorine gas. The entry of Al Qaeda and other jihadist groups into the Syrian crisis underscores its increasingly sectarian manifestation. Nearly 40 percent of Syria's population consists of members of minority communities. Syria's ruling Alawite regime, a branch of Shia Islam, is considered heretical by many of Syria's majority Sunni Muslims -- even those who are not jihadists. Alawites, Druze, Kurds, and Christians could all become targets for WMD-armed Sunni jihadists. Similarly, Shiite radicals could conceivably employ WMD agents against Syria's Sunnis.¶ Religious fanaticism and WMD. Evidence of growing religious fanaticism is also reflected in recent Syrian suicide attacks. Since last December, at least five suicide attacks occurred in Syria. In the 40 years preceding, only two suicide attacks were recorded. Al Qaeda-linked mujahidin are believed to be responsible for all of these recent attacks. Civil wars are often the most violent and unpredictable manifestations of war. With expanding sectarian divisions, the use of seized WMD in Syria's uprising is plausible. To the extent that religious extremists believe that they are doing God's bidding, fundamentally any action they undertake is justified, no matter how abhorrent, since the "divine" ends are believed to legitimize PDF the means.¶ The situation in Syria is unprecedented. Never before has a WMD-armed country fallen into civil war. All states in the region stand poised to lose if these weapons find their way outside of Syria. The best possible outcome, in terms of controlling Syria's enormous WMD arsenal, would be for Assad to maintain power, but such an outcome seems increasingly implausible. And there is painfully little evidence that democratic forces are likely to take over in Syria. Even if they do eventually triumph, it will take months or years to consolidate control over the entire country.¶ If chaos ensues in Syria, the United States cannot go it alone in securing hundreds of tons of Syrian WMD. Regional leaders -- including some, such as Sunni Saudi Arabia and Shiite Iran, that are now backing the insurgency and the regime, respectively -- must come together and begin planning to avert a dispersion of Syrian chemical or biological weapons that would threaten everyone, of any political or religious persuasion, in the Middle East and around the world.

#### Bioterror sweeps the planet – psychological, economic impact and ease of spread

Lilliefors ‘12

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As many as a dozen other nations have pursued or developed offensive biological weapons programs since the treaty came into effect, U.S. officials believe, including North Korea, China, Iran and Syria. But perhaps more troubling is the fact that it has become easier for potential terrorists to obtain biological weapons. As Secretary of State Hillary Clinton said at the Biological and Toxin Weapons Convention Review Conference in Geneva last December (the seventh such international conference since the treaty was signed): “Unfortunately, the ability of terrorists and other non-state actors to develop these weapons is growing.” So, too, apparently, is their desire to do so. In 2010, for instance, al-Qaeda in the Arabian Peninsula called for “brothers with degrees in microbiology or chemistry to develop a weapon of mass destruction.” The world community remains focused on potential nuclear threats—from Iran to North Korea to Pakistan—even though a biological attack could be just as devastating, and more unpredictable. This was the message that Ellen Tauscher, undersecretary of state for Arms Control and International Security, took to the 2009 annual meeting of the States Parties to the Biological Weapons Convention. Tauscher warned that “… a major biological weapons attack on one of the world’s major cities could cause as much death and economic and psychological damage as a nuclear attack.” Her comments came in conjunction with President Obama’s National Strategy for Countering Biological Threats, which set a platform for identifying and responding to possible bio-attacks. This new national strategy was clearly a step in the right direction, updating some of the objectives and principles of the 1972 treaty (which now has 165 signatories). But a more robust international dialogue on improving global health security—something akin to the nuclear threat dialogue—is still sorely needed. To understand how insidiously disruptive even a small-scale biological event could be, we need only look at the anthrax attacks of September and October 2001. Several letters containing anthrax spores were mailed anonymously to news organizations and two United States senators. Five people died as a result, 17 others were infected. Congress was paralyzed and the country was on high alert for weeks—although the heightened concern was mostly transitory. The federal investigation into the attacks went on for more than eight years without an arrest. The case was finally closed in 2010, a year and a half after the FBI’s major suspect, a government bio-defense researcher named Brice Ivins, killed himself.¶ The potential for an “anonymous” event is one of the most frightening aspects of the increasingly complex biological threat. As new diseases emerge, as the life sciences grow more sophisticated and as globalization draws everyone closer together, there are simply more ways that a deadly virus could get loose than there were even a few years ago. It is possible that a deadly pathogen could sweep the planet and we would never know for certain if it was naturally occurring, accidental, a terror attack or something deliberately let loose by a deranged scientist—which is what the FBI believes happened with the anthrax attacks of 2001. As President Obama said recently, “We must come together to prevent and detect and fight every kind of biological danger, whether it’s a pandemic like H1N1 or a terrorist threat or a terrible disease.”

Extinction

Ochs 2

**(**Richard, Naturalist – Grand Teton National park with Masters in Natural Resource Management – Rutgers, “Biological Weapons must be abolished immediately” 6-9, http://www.freefromterror.net/other\_articles/abolish.html)

Of all the weapons of mass destruction, the genetically engineered biological weapons, many without a known cure or vaccine, are an extreme danger to the continued survival of life on earth. Any perceived military value or deterrence pales in comparison to the great risk these weapons pose just sitting in vials in laboratories. While a "nuclear winter," resulting from a massive exchange of nuclear weapons, could also kill off most of life on earth and severely compromise the health of future generations, they are easier to control. Biological weapons, on the other hand, can get out of control very easily, as the recent anthrax attacks has demonstrated. There is no way to guarantee the security of these doomsday weapons because very tiny amounts can be stolen or accidentally released and then grow or be grown to horrendous proportions. The Black Death of the Middle Ages would be small in comparison to the potential damage bioweapons could cause. Abolition of chemical weapons is less of a priority because, while they can also kill millions of people outright, their persistence in the environment would be less than nuclear or biological agents or more localized. Hence, chemical weapons would have a lesser effect on future generations of innocent people and the natural environment. Like the Holocaust, once a localized chemical extermination is over, it is over. With nuclear and biological weapons, the killing will probably never end. Radioactive elements last tens of thousands of years and will keep causing cancers virtually forever. Potentially worse than that, bio-engineered agents by the hundreds with no known cure could wreck even greater calamity on the human race than could persistent radiation. AIDS and ebola viruses are just a small example of recently emerging plagues with no known cure or vaccine. Can we imagine hundreds of such plagues? HUMAN EXTINCTION IS NOW POSSIBLE.

### Advantage 2 is Water

#### Water scarcity coming now - it's a threat multiplier enflames hotspots in Egypt and Central Asia - their defense isn't predictive

**Dinar et al 10/18**

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In short, predictions of a Water World War are overwrought. However, tensions over water usage can still exacerbate other existing regional conflicts. Climate change is expected to intensify droughts, floods, and other extreme weather conditions that jeopardize freshwater quantity and quality and therefore act as a threat-multiplier, making shaky regions shakier. So what river basins constitute the biggest risks today? In a World Bank report we published in 2010 (as well as a subsequent article in a special issue of the Journal of Peace Research) we analyzed the physical effects of climate change on international rivers. We modeled the variability in river annual runoff in the past and for future climate scenarios. We also considered the existence and nature of the institutional capacity around river basins, in the form of international water treaties, to potentially deal with the effects of climate change. According to our research, 24 of the world's 276 international river basins are already experiencing increased water variability. These 24 basins, which collectively serve about 332 million people, are at high risk of water related political tensions. The majority of the basins are located in northern and sub-Saharan Africa. A few others are located in the Middle East, south-central Asia, and South America. They include the Tafna (Algeria and Morocco), the Dasht (Iran and Pakistan), the Congo (Central Africa), Lake Chad (Central Africa), the Niger (Western Africa), the Nile (Northeastern Africa), and the Chira (Ecuador and Peru). There are no strong treaties governing the use of these water reserves in tense territories. Should conflicts break out, there are no good mechanisms in place for dealing with them. By 2050, an additional 37 river basins, serving 83 million people, will be at high risk for feeding into political tensions. As is the case currently, a large portion of these are in Africa. But, unlike today, river basins within Central Asia, Eastern Europe, Central Europe, and Central America will also be at high risk within 40 years. Some of these include the Kura-Araks (Iran, Turkey, and the Caucasus), the Neman (Eastern Europe) Asi-Orontes (Lebanon, Syria, Turkey), and the Catatumbo Basins (Colombia and Venezuela). CROSSING THE NILE Among the larger African basins, the Nile has the greatest implications for regional and global security. Tensions over access to the river already pit Ethiopia and Egypt, two important Western allies, against one another. Egypt has been a major player in the Middle East Peace Process and Ethiopia is an important regional force in the Horn of Africa, currently aiding other African forces to battle Al-Shabbab in Somalia. Over the years, a number of international water treaties have made rules for the basin, but they are largely limited to small stretches of it. In particular, only Egypt and Sudan are party to the 1959 Nile River Agreement, the principal treaty regarding the river. Egypt, which is the furthest downstream yet is one of the most powerful countries in the region, has been able to heavily influence the water-sharing regime. Upstream countries, such as Ethiopia and Burundi, have been left out, hard-pressed to harness the Nile for their own needs. In 1999, with increasingly vitriolic rhetoric between Egypt and Ethiopia sidetracking regional development, the World Bank stepped up its involvement in the basin. It helped create a network of professional water managers as well as a set of investments in a number of sub-basins. Still, the drafting of a new agreement stalled: upstream countries would not compromise on their right to develop water infrastructure while downstream countries would not compromise on protecting their shares. In 2010, Ethiopia signed an agreement with a number of the other upstream countries hoping to balance against Egypt and Sudan. More recently, the country has also announced plans to construct a number of large upstream dams, which could affect the stability of the region. By 2050, the environmental state of the Nile Basin will be even worse. That is why it is important to create a robust and equitable water treaty now. Such a treaty would focus on ways to harness the river's hydropower potential to satiate the energy needs of all the riparian states while maintaining ecosystem health. The construction of dams and reservoirs further upstream could likewise help even out water flows and facilitate agricultural growth. Projects such as these, mitigating damage to ecosystem health and local populations, would benefit all parties concerned and thus facilitate further basin-wide cooperation. UP IN THE ARAL Another water basin of concern is the Aral Sea, which is shared by Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. The basin consists of two major rivers, the Syr Darya and Amu Darya. During the Soviet era, these two rivers were managed relatively effectively. The break-up of the Soviet Union, however, ended that. The major dispute now is between upstream Kyrgyzstan and downstream Uzbekistan over the Syr Darya. During the winter, Kyrgyzstan needs flowing water to produce hydroelectricity whereas Uzbekistan needs to store water to later irrigate cotton fields. The countries have made several attempts to resolve the dispute. In particular, downstream Uzbekistan, which is rich in fuel and gas, has provided energy to Kyrgyzstan to compensate for keeping water in its large reservoirs until the cotton-growing season. Such barter agreements, however, have had limited success because they are easily manipulated. Downstream states might deliver less fuel during a rainy year, claiming they need less water from upstream reservoirs, and upstream states might deliver less water in retaliation. Kyrgyzstan, frustrated and desperate for energy in winter months, plans to build mega hydro-electric plants in its territory. And another upstream state, Tajikistan, is likewise considering hydro-electricity to satiate its own energy needs. Meanwhile, Uzbekistan is building large reservoirs. Although these plans might make sense in the very near term, they are inefficient in the medium and long term because they don't solve the real needs of downstream states for large storage capacity to protect against water variability across time. In fact, both Kyrgyzstan and Uzbekistan, along with Kazakhstan, will see substantial increases in water variability between now and 2050. And so, the need to share the benefits of existing large-capacity upstream reservoirs and coordinate water uses through strong and more efficient inter-state agreements is unavoidable. A stabilized Aral Sea basin would also benefit the United States. With its withdrawal from Afghanistan, Washington has been courting Uzbekistan as a potential alternative ally and provider of stability in the region. The Uzbek government seems willing to host U.S. military bases and work as a counter-weight to Russia. Kyrgyzstan is also an important regional player. The Manas Air Base, the U.S. military installation near Bishkek, is an important transit point. The country is also working with the United States to battle drug trafficking and infiltration of criminal and insurgent groups. Regional instability could disrupt any of these strategic relationships. If the past is any indication, the world probably does not need to worry about impending water wars. But they must recognize how tensions over water can easily fuel larger conflicts and distract states from other important geopolitical and domestic priorities. Since formal inter-state institutions are key to alleviating tensions over shared resources, it would be wise, then, for the involved governments as well as the international community to negotiate sufficiently robust agreements to deal with impending environmental change. Otherwise, freshwater will only further frustrate stability efforts in the world's volatile regions.

#### Only SMR’s solve

IAEA 7

“Economics of Nuclear Desalination: New Developments and Site Specific Studies”, July, <http://www-pub.iaea.org/MTCD/publications/PDF/te_1561_web.pdf>

Seventy percent of the planet is covered with water, but only 2.5% of that is fresh water. Nearly 70% of this fresh water is frozen in the icecaps of Antarctica and Greenland. Most of the rest is in the form of soil moisture or in deep inaccessible aquifers or comes in the form of heavy rains and floods that are difficult to contain and exploit. Consequently, only less than 0.008% (about 70 000 km3) of the world’s water is readily accessible for direct human use, and even that is very unevenly distributed. Recent statistics show that currently 2.3 billion people live in water-stressed areas and among them 1.7 billion live in water-scarce areas, where the water availability per person is less than 1000 m3/year. In fact, the situation is expected to worsen further since, by 2025, the number of people suffering from water stress or scarcity could swell to 3.5 billion, out of which 2.4 billion would live in water-scarce regions. Water scarcity is a global issue. Every year new countries are affected by growing water problems.¶ It is for this reason that the Millennium Declaration by UN General Assembly in 2000 set up a target¶ to halve, by the year 2015, the world population, which is unable to reach, or to afford, safe drinking¶ water. Vision 21: shared vision for Hygiene, Water Supply and Sanitation, has a target to provide¶ water, sanitation and hygiene for all by 2025.¶ Better water conservation, water management, pollution control and water reclamation are all part of the integrated solution to projected water stresses. So too are new sources of fresh water, including the desalination of seawater.¶ Desalination technologies have been well established since the mid-20th century and widely deployed in the Middle East and North Africa. The contracted capacity of desalination plants has increased steadily since 1965 and is now about 36 million m3/day worldwide, as shown in Figure 1. This capacity could cater to world’s population roughly 6 litres a day per capita of fresh potable water. If this capacity were available to 1.5 billion in the world without direct access to drinking water, it would provide approximately 20 litres/day/capita.¶ Large scale commercially available desalination processes can generally be classified into two categories: (a) distillation processes that require mainly heat plus some electricity for ancillary equipment, and (b) membrane processes that require only electricity. In the first category (distillation) there are two major processes: multi-stage flash (MSF) and multi-effect distillation (MED). In both processes, seawater is heated; the steam that evaporates is condensed and collected as freshwater; and the residual brine is discharged.¶ In the second category (membranes) is the reverse osmosis process (RO), in which pure water passes from the high-pressure seawater side of a semi-permeable membrane to the low-pressure freshwater side. The pressure differential must be high enough to overcome the natural tendency for water to move from the low concentration freshwater side of a membrane to the high concentration seawater side in order to balance osmotic pressures.¶ The energy for the desalination plants is generally supplied in the form of either steam or electricity. Conventional fossil fuel-powered plants have normally been utilized as the primary sources but their intensive use raises increasing environmental concerns, specifically in relation to greenhouse gas emissions (Section 1.3.3). The depleting sources and the future price uncertainty of the fossil fuels and their better use for other vital industrial applications are also the factors to be considered.¶ 1.3. THE ROLE OF NUCLEAR POWER IN DESALINATION¶ The world energy requirements are presently met from oil, coal, gas, hydro, nuclear and renewable energies in that order as shown in Table 1.¶ It is now universally recognized that there will be an increase in the world’s requirement for electricity over the next few decades. The present trend towards meeting this demand includes the building of fossil fuel plants, particularly combined cycle gas fired plants.¶ However, the spiralling increase in greenhouse gas (GHG) emissions has resulted in setting the emission targets in international meetings held at Toronto, Rio de Janeiro and Kyoto. The IAEA predicts that the GHG emissions would be 36-50% higher by 2010 compared to 1990 levels. Many analysts, therefore, feel that the only viable alternative to fossil fuels is nuclear energy to reduce the rate of increase of GHG, particularly, carbon dioxide.¶ Yet another incentive for nuclear power is to maintain diversity of supply. A national strategy limited to one particular form of energy (fossil fuels) will be vulnerable to increased fuel costs and pressures from exporting countries.¶ Nuclear power is a proven technology, which has provided more than 16% of world electricity supply in over 30 countries. More than ten thousand reactor-years of operating experience have been accumulated over the past 5 decades.¶ There are many reasons which favour a possible revival of the nuclear power production in the years to come. It is thus expected that this revival would also lead to an increased role of nuclear energy in non-electrical energy services, which, at the moment, are almost entirely dominated by fossil energy sources. Among various utilization of nuclear energy for non-electrical products, using it for the production of freshwater from seawater (nuclear desalination) has been drawing broad interest in the IAEA Member States as a result of acute water shortage issues in many arid and semi-arid zones worldwide. With technical co-ordination or support of the IAEA, several demonstration programs of nuclear desalination are also in progress in several Member States to confirm its technical and economical viability under country-specific conditions¶ The desalination of seawater using nuclear energy is a feasible option to meet the growing demand for potable water. Over 175 reactor-years of operating experience on nuclear desalination have already been accumulated worldwide.¶ 1.3.1. Nuclear desalination¶ In the IAEA terminology, nuclear desalination is defined to be the production of potable water from seawater in a facility in which a nuclear reactor is used as the source of energy for the desalination process. Electrical and/or thermal energy may be used in the desalination process on the same site. The facility may be dedicated solely to the production of potable water, or may be used for the generation of electricity and production of potable water, in which case only a portion of the total energy output of the reactor is used for water production.¶ The design approaches for a nuclear desalination plant are essentially derived from those of the nuclear reactor alone, with some additional aspects to be considered in the design of a desalination plant and its integration with the nuclear system.¶ All nuclear reactor types can provide the energy required by the various desalination processes. In this regard, it has been shown that Small and Medium Reactors (SMRs) offer the largest potential as coupling options to nuclear desalination systems in developing countries. The development of innovative reactor concepts and fuel cycles with enhanced safety features as well as their attractive economics are expected to improve the public acceptance and further the prospects of nuclear desalination.¶ The coupling with nuclear system is not difficult technically but needs some consideration in (a)¶ avoiding cross-contamination by radioactivity, (b) providing backup heat or power sources in case the¶ nuclear system is not in operation (e.g. for refuelling and maintenance), (c) incorporation of certain¶ design features, minimising the impact of the thermal desalination systems’ coupling to the nuclear¶ reactors (Section 1.6).¶ 1.3.2. Why nuclear desalination?¶ The International Atomic Energy Agency is a specialized organization of the UN system that seeks to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world. The institutional basis for the IAEA’s involvement in nuclear desalination is in its Statute and Medium Term Strategy.¶ Article II of the IAEA Statute provides that:¶ “ The Agency shall seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world”.¶ This refers implicitly to nuclear desalination as an option for the use of nuclear technologies.¶ The same applies to the Article III of the Statute, which authorizes the IAEA:¶ “ To encourage and assist research on, and development and practical application of, atomic energy for peaceful uses throughout the world….”; (Article III, A.1); and¶ “To foster the exchange of scientific and technical information on peaceful uses of atomic energy.” (Article III, A.3).¶ In addition, Objective A.3 of the Agency’s Medium Term Strategy requires the Agency:¶ “ To support and facilitate the development of new and emerging applications of nuclear technologies by co-generation and heat applications, including seawater desalination”.¶ Request of assessing feasibility of using nuclear energy for seawater desalination was first made by the five North African countries to the IAEA in 1989 and the General Conference adopted its resolution to resume the study. These countries are located in semi-arid zones and already suffer from water shortages.¶ In recent years, interests have been also been indicated by Member States in South and South East Asia for the feasibility, as well as the demonstration, of nuclear desalination projects. The issue has since then been repeatedly stressed at the General Conference (Committee on the Whole) and supported by many Member States including most members of Group-77. The support stems not only from their expectation of its possible contribution to the freshwater issue but has also been motivated by a variety of reasons that include: the economic competitiveness of nuclear desalination in areas lacking cheap hydropower or fossil fuel resources, energy supply diversification, conservation of fossil fuel resources and spin-off effects of nuclear technology for industrial development.¶ Looking to the future, there are several reasons for focusing now on expanding nuclear power’s contribution to desalination. Apart from the expanding demand for freshwater and the increasing concern about GHG emissions and pollution from fossil fuels, there is a renewed and growing emphasis on small and medium sized nuclear reactors, and this is particularly important for desalination because the countries most in need of new sources of freshwater often have limited industrial infrastructures and relatively weaker electricity grids. The size of the grid limits the possibilities for integrating a co-generating nuclear power plant into the grid to supply the electricity market, in addition to meeting the energy requirements of a desalination plant. The largest power unit that can be integrated into an electricity grid must not exceed about 10-20 % of the total grid capacity. Of course, smaller nuclear reactors would be more appropriate for remote areas that are not suitable for connections to the grid.¶ For nuclear desalination to be attractive in any given country, two conditions have to be satisfied simultaneously: a lack of water and the ability to use nuclear energy for desalination. In most regions, only one of the two is present. Both are present for example in China, the Republic of Korea, India and Pakistan. These regions already account for almost half the world’s population, and thus represent a potential long term market for nuclear desalination. The market will expand further to the extent that regions with high projected water needs, such as the Middle East and North Africa, increase their nuclear expertise and capabilities.¶ 1.3.3. Environmental impact of desalination by fossil fuelled energy sources¶ Desalination is an energy intensive process. A future desalination strategy based only on the use of fossil fuelled systems is not sustainable: Fossil fuel reserves are finite and must be conserved for more important uses such as transport, petrochemical industry etc. Besides, the demands for desalted water would continue increasing as population grows and standards of living improve. Conservation measures such as the modernisation of water networks to minimise leakages, the recycling of used water etc. will certainly reduce the future water demands slightly but they would not be able to halt the dissemination of desalination plants and consequently of the fossil fuelled based systems for the production of needed electricity and heat.¶ The following paragraphs illustrate the damaging consequences of such a policy by taking the example of the Mediterranean region.¶ Following the recent “Blue Plan” [2], the total available natural water resources (1), based on the statistics from 1990 to 1998, in the principle countries of the Mediterranean region, are as shown in Table 2.¶ The projected demands (3) for the year 2025 [31] are also included in Table 1.¶ It is obvious that available natural water resources would rather decrease in 2025 because of increased pollution, over exploitation and other human activities. However, to keep matters simple, it would be supposed that they would remain at the same level as in 1998.¶ It can be observed that, in 2025, the total projected water deficit (balance) in the Mediterranean region would of the order of 294 km3/per year.¶ Not all this required capacity would be met by desalination plants. Current contribution of desalination is of the order of 1 to 2 %. If it is supposed that in 2025, this contribution would be about 2.5 %, then the total required desalting capacity would be 7.3 km3/year (20.1 million m3/day).¶ According to the EC ExternE study2, the total emissions of GHG per MW(e).h of electricity produced by representative fossil fuelled power plants in France, are as presented in Table 3.¶ The specific heat and electricity consumptions of three main desalination plants are given in Table 4, [3].¶ The data presented in the above Tables allows to calculate the approximate3 total GHG emissions produced by the fossil fuelled plants and the three desalination plants.¶ Results for a total desalting capacity of 20.1 million m3/day are presented in Table 5.¶ It can thus be concluded that for a desalting capacity of 20.1 million m3/day in the Mediterranean region alone, required in 2025, one would produce, depending upon the energy source and the desalination process used,¶ 13 to 264 million tonnes/year of CO2.¶ 1350 to 1 310 000 tonnes/year of SOx.¶ 21 100 to 540 000 tonnes/year of NOx.¶ 1190 to 40 000 tonnes/year of particles.¶ The potential levels of GHG and particle emissions on the world scale could then be more than double these figures.¶ These could naturally be avoided through the use of nuclear energy.

#### Key to deescalate conflicts

Palley ‘11

Reese Palley, The London School of Economics, 2011, The Answer: Why Only Inherently Safe, Mini Nuclear Power Plans Can Save Our World, p. 168-71

The third world has long been rent in recent droughts, by the search for water. In subsistence economies, on marginal land, water is not a convenience but a matter of life and death. As a result small wars have been fought, rivers diverted, and wells poisoned in what could be a warning of what is to come as industrialized nations begin to face failing water supplies. Quite aside from the demand for potable water is the dependence of enormous swaths of industry and agriculture on oceans of water used for processing, enabling, and cleaning a thousand processes and products. It is interesting to note that fresh water used in both industry and agriculture is reduced to a nonrenewable resource as agriculture adds salt and industry adds a chemical brew unsuitable for consumption. More than one billion people in the world already lack access to clean water, and things are getting worse. Over the next two decades, the average supply of water per person will drop by a third, condemning millions of people to waterborne diseases and an avoidable premature death.81 So the stage is set for water access wars between the first and the third worlds, between neighbors downstream of supply, between big industry and big agriculture, between nations, between population centers, and ultimately between you and the people who live next door for an already inadequate world water supply that is not being renewed. As populations inevitably increase, conflicts will intensify.82 It is only by virtue of the historical accident of the availability of nuclear energy that humankind now has the ability to remove the salt and other pollutants to supply all our water needs. The problem is that desalination is an intensely local process. Some localities have available sufficient water from renewable sources to take care of their own needs, but not enough to share with their neighbors, and it is here that the scale of nuclear energy production must be defined locally. Large scale 1,000 MWe plants can be used to desalinate water as well as for generating electricity However we cannot build them fast enough to address the problem, and, if built they would face the extremely expensive problem of distributing the water they produce. Better, much better, would be to use small desalinization plants sited locally. Beyond desalination for human use is the need to green some of the increasing desertification of vast areas such as the Sahara. Placing twenty 100 MWe plants a hundred miles apart along the Saharan coast would green the coastal area from the Atlantic Ocean to the Red Sea, a task accomplished more cheaply and quickly than through the use of gigawatt plants.83 This could proceed on multiple tracks wherever deserts are available to be reclaimed. Leonard Orenstein, a researcher in the field of desert reclamation, speculates: If most of the Sahara and Australian outback were planted with fast-growing trees like eucalyptus, the forests could draw down about 8 billion tons of carbon a year—nearly as much as people emit from burning fossil fuels today. As the forests matured, they could continue taking up this much carbon for decades.84 The use of small, easily transported, easily sited, and walk away safe nuclear reactors dedicated to desalination is the only answer to the disproportionate distribution of water resources that have distorted human habitation patterns for millennia. Where there existed natural water, such as from rivers, great cities arose and civilizations flourished. Other localities lay barren through the ages. We now have the power, by means of SMRs profiled to local conditions, not only to attend to existing water shortages but also to smooth out disproportionate water distribution and create green habitation where historically it has never existed. The **endless wars** that have been fought, first over solid bullion gold and then over oily black gold, can now engulf us in the desperate reach for liquid blue gold. We need **never fight these wars** again as we now have the nuclear power to fulfill the biblical ability to “strike any local rock and have water gush forth.”

#### Indo-Pak water scarcity’s coming – causes escalatory disputes

Priyadarshi 12

Nitish Priyadarshi 12, lecturer in the department of environment and water management at Ranchi University in India, “War for water is not a far cry”, June 16, <http://www.cleangangaportal.org/node/44>

Such is the deep nexus between water and global warming that the increased frequency of climate change-driven extreme weather events like hurricanes, droughts and flooding, along with the projected rise of ocean levels, is likely to spur greater interstate and intrastate migration- especially of the poor and the vulnerable- from delta and coastal regions to the hinterland.¶ As the planet warms, water grow scarcer. Global warming will endanger the monsoon, which effects much greater than those of drought alone-particularly in India given that 70 percent of India’s rainfall comes from the monsoon.¶ The declining snow cover and receding glaciers in the Himalayan state of Jammu and Kashmir could trigger renewed hostilities between India and Pakistan, neighbouring states in the South Asian region that are at odds on a host of issues.¶ The two countries share the Indus River, one of the longest rivers in the world. The river rises in southwestern Tibet and flows northwest through the Himalayas. It crosses into the Kashmir region, meandering to the Indian and Pakistani administered areas of the territory.¶ Pakistan and India have long been embroiled in a territorial dispute over Kashmir, but have so far managed to uphold a World Bank-mediated Indus Water Treaty (IWT) that provides mechanisms for resolving disputes over water sharing. Any drastic reduction in the availability of water in the region has the potential of causing a war between the hostile south Asian neighbors.¶ The Indus water system is the lifeline for Pakistan, as 75 to 80 percent of water flows to Pakistan as melt from the Himalayan glaciers. This glacier melt forms the backbone of irrigation network in Pakistan, with 90 percent of agricultural land being fed by the vastly spread irrigation network in Pakistan, one of the largest in the world. Any disruption of water flow would cause a grave impact on agriculture produce in Pakistan.¶ The Indus Waters Treaty is a water-sharing treaty between the Republic of India and Islamic Republic of Pakistan, brokered by the World Bank (then the International Bank for Reconstruction and Development). The treaty was signed in Karachi on September 19, 1960 by Indian Prime Minister Jawaharlal Nehru and President of Pakistan Mohammad Ayub Khan. The treaty was a result of Pakistani fear that since the source rivers of the Indus basin were in India, it could potentially create droughts and famines in Pakistan, especially at times of war. However, India did not revoke the treaty during any of three later Indo-Pakistani Wars.¶ Until now, the Indus Water Treaty has worked well, but the impact of climate change would test the sanctity of this treaty. Under the treaty signed in 1960, the two countries also share five tributaries of the Indus river, namely, Jhelum, Chenab, Ravi, Beas and Sutlej. The agreement grants Pakistan exclusive rights over waters from the Indus and its westward-flowing tributaries, the Jhelum and Chenab, while the Ravi, Beas and Sutlej rivers were allocated for India’s use.¶ Transboundary water sharing between India and Pakistan will become an extremely difficult proposition as surface water would become a scarce commodity with the depletion of water reserves up in the mountains.¶ The sharing of the Ganges waters is a long-standing issue between India and Bangladesh over the appropriate allocation and development of the water resources of the Ganges River that flows from northern India into Bangladesh. The issue has remained a subject of conflict for almost 35 years, with several bilateral agreements and rounds of talks failing to produce results.

#### Goes nuclear

Zahoor ‘11

(Musharaf, is researcher at Department of Nuclear Politics, National Defence University, Islamabad, “Water crisis can trigger nuclear war in South Asia,” <http://www.siasat.pk/forum/showthread.php?77008-Water-Crisis-can-Trigger-Nuclear-War-in-South-Asia>, AM)

South Asia is among one of those regions where water needs are growing disproportionately to its availability. The high increase in population besides large-scale cultivation has turned South Asia into a water scarce region. The two nuclear neighbors Pakistan and India share the waters of Indus Basin. All the major rivers stem from the Himalyan region and pass through Kashmir down to the planes of Punjab and Sindh empty into Arabic ocean. It is pertinent that the strategic importance of Kashmir, a source of all major rivers, for Pakistan and symbolic importance of Kashmir for India are maximum list positions. Both the countries have fought two major wars in 1948, 1965 and a limited war in Kargil specifically on the Kashmir dispute. Among other issues, the newly born states fell into water sharing dispute right after their partition. Initially under an agreed formula, Pakistan paid for the river waters to India, which is an upper riparian state. After a decade long negotiations, both the states signed Indus Water Treaty in 1960. Under the treaty, India was given an exclusive right of three eastern rivers Sutlej, Bias and Ravi while Pakistan was given the right of three Western Rivers, Indus, Chenab and Jhelum. The tributaries of these rivers are also considered their part under the treaty. It was assumed that the treaty had permanently resolved the water issue, which proved a nightmare in the latter course. India by exploiting the provisions of IWT started wanton construction of dams on Pakistani rivers thus scaling down the water availability to Pakistan (a lower riparian state). The treaty only allows run of the river hydropower projects and does not permit to construct such water reservoirs on Pakistani rivers, which may affect the water flow to the low lying areas. According to the statistics of Hydel power Development Corporation of Indian Occupied Kashmir, India has a plan to construct 310 small, medium and large dams in the territory. India has already started work on 62 dams in the first phase. The cumulative dead and live storage of these dams will be so great that India can easily manipulate the water of Pakistani rivers. India has set up a department called the Chenab Valley Power Projects to construct power plants on the Chenab River in occupied Kashmir. India is also constructing three major hydro-power projects on Indus River which include Nimoo Bazgo power project, Dumkhar project and Chutak project. On the other hand, it has started Kishan Ganga hydropower project by diverting the waters of Neelum River, a tributary of the Jhelum, in sheer violation of the IWT. The gratuitous construction of dams by India has created serious water shortages in Pakistan. The construction of Kishan Ganga dam will turn the Neelum valley, which is located in Azad Kashmir into a barren land. The water shortage will not only affect the cultivation but it has serious social, political and economic ramifications for Pakistan. The farmer associations have already started protests in Southern Punjab and Sindh against the non-availability of water. These protests are so far limited and under control. The reports of international organizations suggest that the water availability in Pakistan will reduce further in the coming years. If the situation remains unchanged, the violent mobs of villagers across the country will be a major law and order challenge for the government. The water shortage has also created mistrust among the federative units, which is evident from the fact that the President and the Prime Minister had to intervene for convincing Sindh and Punjab provinces on water sharing formula. The Indus River System Authority (IRSA) is responsible for distribution of water among the provinces but in the current situation it has also lost its credibility. The provinces often accuse each other of water theft. In the given circumstances, Pakistan desperately wants to talk on water issue with India. The meetings between Indus Water Commissioners of Pakistan and India have so far yielded no tangible results. The recent meeting in Lahore has also ended without concrete results. India is continuously using delaying tactics to under pressure Pakistan. The Indus Water Commissioners are supposed to resolve the issues bilaterally through talks. The success of their meetings can be measured from the fact that Pakistan has to knock at international court of arbitration for the settlement of Kishan Ganga hydropower project. The recently held foreign minister level talks between both the countries ended inconclusively in Islamabad, which only resulted in heightening the mistrust and suspicions. The water stress in Pakistan is increasing day by day. The construction of dams will not only cause damage to the agriculture sector but India can manipulate the river water to create inundations in Pakistan. The rivers in Pakistan are also vital for defense during wartime. The control over the water will provide an edge to India during war with Pakistan. The failure of diplomacy, manipulation of IWT provisions by India and growing water scarcity in Pakistan and its social, political and economic repercussions for the country can lead both the countries toward a war. The existent A-symmetry between the conventional forces of both the countries will compel the weaker side to use nuclear weapons to prevent the opponent from taking any advantage of the situation. Pakistan's nuclear programme is aimed at to create minimum credible deterrence. India has a declared nuclear doctrine which intends to retaliate massively in case of first strike by its' enemy. In 2003, India expanded the operational parameters for its nuclear doctrine. Under the new parameters, it will not only use nuclear weapons against a nuclear strike but will also use nuclear weapons against a nuclear strike on Indian forces anywhere. Pakistan has a draft nuclear doctrine, which consists on the statements of high ups. Describing the nuclear thresh-hold in January 2002, General Khalid Kidwai, the head of Pakistan's Strategic Plans Division, in an interview to Landau Network, said that Pakistan will use nuclear weapons in case India occupies large parts of its territory, economic strangling by India, political disruption and if India destroys Pakistan's forces. The analysis of the ambitious nuclear doctrines of both the countries clearly points out that any military confrontation in the region can result in a nuclear catastrophe. The rivers flowing from Kashmir are Pakistan's lifeline, which are essential for the livelihood of 170 million people of the country and the cohesion of federative units. The failure of dialogue will leave no option but to achieve the ends through military means.

#### Indo-Pak war causes extinction

Chaffin ‘11

Greg Chaffin 11, Research Assistant at Foreign Policy in Focus, July 8, 2011, “Reorienting U.S. Security Strategy in South Asia,” online: http://www.fpif.org/articles/reorienting\_us\_security\_strategy\_in\_south\_asia

The greatest threat to regional security (although curiously not at the top of most lists of U.S. regional concerns) is the possibility that increased India-Pakistan tension will erupt into all-out war that could quickly escalate into a nuclear exchange. Indeed, in just the past two decades, the two neighbors have come perilously close to war on several occasions. India and Pakistan remain the most likely belligerents in the world to engage in nuclear war. ¶ Due to an Indian preponderance of conventional forces, Pakistan would have a strong incentive to use its nuclear arsenal very early on before a routing of its military installations and weaker conventional forces. In the event of conflict, Pakistan’s only chance of survival would be the early use of its nuclear arsenal to inflict unacceptable damage to Indian military and (much more likely) civilian targets. By raising the stakes to unacceptable levels, Pakistan would hope that India would step away from the brink. However, it is equally likely that India would respond in kind, with escalation ensuing. Neither state possesses tactical nuclear weapons, but both possess scores of city-sized bombs like those used on Hiroshima and Nagasaki. ¶ Furthermore, as more damage was inflicted (or as the result of a decapitating strike), command and control elements would be disabled, leaving individual commanders to respond in an environment increasingly clouded by the fog of war and decreasing the likelihood that either government (what would be left of them) would be able to guarantee that their forces would follow a negotiated settlement or phased reduction in hostilities. As a result any such conflict would likely continue to escalate until one side incurred an unacceptable or wholly debilitating level of injury or exhausted its nuclear arsenal. ¶ A nuclear conflict in the subcontinent would have disastrous effects on the world as a whole. In a January 2010 paper published in Scientific American, climatology professors Alan Robock and Owen Brian Toon forecast the global repercussions of a regional nuclear war. Their results are strikingly similar to those of studies conducted in 1980 that conclude that a nuclear war between the United States and the Soviet Union would result in a catastrophic and prolonged nuclear winter, which could very well place the survival of the human race in jeopardy. In their study, Robock and Toon use computer models to simulate the effect of a nuclear exchange between India and Pakistan in which each were to use roughly half their existing arsenals (50 apiece). Since Indian and Pakistani nuclear devices are strategic rather than tactical, the likely targets would be major population centers. Owing to the population densities of urban centers in both nations, the number of direct casualties could climb as high as 20 million. ¶ The fallout of such an exchange would not merely be limited to the immediate area. First, the detonation of a large number of nuclear devices would propel as much as seven million metric tons of ash, soot, smoke, and debris as high as the lower stratosphere. Owing to their small size (less than a tenth of a micron) and a lack of precipitation at this altitude, ash particles would remain aloft for as long as a decade, during which time the world would remain perpetually overcast. Furthermore, these particles would soak up heat from the sun, generating intense heat in the upper atmosphere that would severely damage the earth’s ozone layer. The inability of sunlight to penetrate through the smoke and dust would lead to global cooling by as much as 2.3 degrees Fahrenheit. This shift in global temperature would lead to more drought, worldwide food shortages, and widespread political upheaval.¶ Although the likelihood of this doomsday scenario remains relatively low, the consequences are dire enough to warrant greater U.S. and international attention. Furthermore, due to the ongoing conflict over Kashmir and the deep animus held between India and Pakistan, it might not take much to set them off. Indeed, following the successful U.S. raid on bin Laden’s compound, several members of India’s security apparatus along with conservative politicians have argued that India should emulate the SEAL Team Six raid and launch their own cross-border incursions to nab or kill anti-Indian terrorists, either preemptively or after the fact. Such provocative action could very well lead to all-out war between the two that could quickly escalate.

#### No diplomacy or institutions

Radin 10

Adam Radin 10, masters in security studies from the naval postgraduate school, “the security implications of water: prospects for instability or cooperation in south and central asia”, March, <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA518674>

Water, an issue so important to numerous facets of each state’s economy and overall stability, must not be left to loosely observed and nonbinding agreements. Tajikistan has even gone as far as to appeal to the United Nations General Assembly to focus on the “Central Asia water dilemma.”142 In a region that is still developing, and where the government’s survival rely more on its relations with it people versus its regional neighbors, domestic needs will continue to trump international cooperation. As Linn notes in his plan, the need for global actors to take an active role is likely needed in order for sustained cooperation. Additionally, this also provides an opportunity for Russia to actively insert itself through diplomacy and infrastructural investments, seeing that they still consider the CARs under their sphere of influence.143¶ The chapter presents a contrasting case study to South Asia, as in Central Asia water is not viewed as a regional security issue, but in terms of fulfilling short-term domestic needs. Without the looming threat of conflict or significant retribution from regional neighbors, cooperation is consistently undervalued and abandoned once domestic pressures increase. The problem with this pattern is that resources will likely continue to deteriorate and the CARs will continue to be dependent on each other to provide water and energy. Without sustained and flexible cooperation, the region at the very least will see greater stresses on government to provide for their populations, leading to domestic and potential regional instability.

#### SMRs get exported

Rosner and Goldberg 11

Robert Rosner, Stephen Goldberg, Energy Policy Institute at Chicago, The Harris School of Public Policy Studies, November 2011, SMALL MODULAR REACTORS –KEY TO FUTURE NUCLEAR POWER GENERATION IN THE U.S., <https://epic.sites.uchicago.edu/sites/epic.uchicago.edu/files/uploads/EPICSMRWhitePaperFinalcopy.pdf>

Previous studies have documented the potential for a significant export market for U.S. SMRs, mainly in lesser developed countries that do not have the demand or infrastructure to accommodate GW-scale LWRs. Clearly, the economics of SMR deployment depends not only on the cost of SMR modules, but also on the substantial upgrades in all facets of infrastructure requirements, particularly in the safety and security areas, that would have to be made, and as exemplified by the ongoing efforts in this direction by the United Arab Emirates (and, in particular, by Abu Dhabi). This is a substantial undertaking for these less developed countries. Thus, such applications may be an attractive market opportunity for FOAK SMR plants, even if the cost of such plants may not have yet achieved all of the learning benefits.¶ The Department of Commerce has launched the Civil Nuclear Trade Initiative, which seeks to identify the key trade policy challenges and the most significant commercial opportunities. The Initiative encompasses all aspects of the U.S. nuclear industry, and, as part of this effort, the Department identified 27 countries as “markets of interest” for new nuclear expansion. A recent Commerce Department report identified that “SMRs can be a solution for certain markets that have smaller and less robust electricity grids and limited investment capacity.” Studies performed by Argonne National Laboratory suggest that SMRs would appear to be a feasible power option for countries that have grid capacity of 2,000-3,000 MW. Exports of SMR technology also could play an important role in furthering non-proliferation policy objectives. The design of SMR nuclear fuel management systems, such as encapsulation of the fuel, may have non-proliferation benefits that merit further assessment. Also, the development of an SMR export industry would be step toward a U.S.-centric, bundled reliable fuel services.

### Solvency

#### Military procurement- solves commercial use and islanding- avoid regulation

Andres and Loudermilk 10

(Richard B. Andres, 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, Micah J, Research Associate for the Energy & Environmental Security Policy program with the Institute for National Strategic Studies at National Defense University, “Small Reactors and the Military’s Role in Securing America’s Nuclear IndustryPosted” <http://robertmayer.wordpress.com/2010/08/28/small-reactors-and-the-militarys-role-in-securing-americas-nuclear-industryposted/>, SEH)

Unlike private industry, **the military does not face the same regulatory and congressional hurdles to constructing reactors and would have an easier time in adopting them for use**. **By integrating small nuclear reactors as power sources for domestic U.S. military bases, three potential energy dilemmas are solved at the same time**. First, by incorporating small reactors at its bases, **the military addresses its own energy security quandary**. **The military has recently sought to “island” its bases in the U.S. -protecting them from grid outages**, be they accidental or intentional. **The Department of Defense has promoted this endeavor through lowering energy consumption on bases and searching for renewable power alternatives, but these measures alone will prove insufficient**. **Small reactors provide sufficient energy output to power military installations** and in some cases surrounding civilian population centers.¶ **Secondly, as the reactors become integrated on military facilities, the stigma on the nuclear power industry will ease and inroads will be created for the adoption of small-scale reactors as a viable source of energy. Private industry and the public will see that nuclear reactors can indeed be utilized safely and effectively, resulting in a renewed push toward the expansion of nuclear power**. Although many of the same hurdles will still be in place, **a shift in public opinion and a stronger effort by utilities, coupled with the demonstrated success of small reactors on military bases, could prove the catalysts necessary for the federal government and the NRC to take more aggressive action**.¶ Finally, while new reactors are not likely in the near future**, the military’s actions will preserve, for a while longer, the badly ailing domestic nuclear energy industry. Nuclear power is here to stay around the globe, and the United States has an opportunity to take a leading role in supplying the world’s nuclear energy and reactor technology.** With the U.S. nuclear industry dormant for three decades, much of the attention, technology, and talent have concentrated overseas in countries with a strong interest in nuclear technology. Without the United States as a player in the nuclear energy market, it has little say over safety regulations of reactors or the potential risks of proliferation **from the expansion of nuclear energy. If the current trend continues, the U.S. will reach a point where it is forced to import nuclear technology and reactors from other countries. Action by the military to install reactors on domestic bases will both guarantee the survival of the American nuclear industry in the short term, and work to solidify support for it in the long run.**¶ Ultimately**, between small-scale nuclear reactors and the U.S. military, the capability exists to revitalize America’s sleeping nuclear industry and promoting energy security and clean energy production**. The reactors offer the ability to power domestic military bases, small towns, and other remote locations detached from the energy grid. Furthermore, reactor sites can house multiple units, allowing for greater energy production – rivaling even large reactors. **Small reactors offer numerous benefits to the United States and a path initiated by the military presents a realistic route by which their adoption can be achieved.**

#### DOD key- prevents unfavorable lock-in

Andres and Breetz 11

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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.**

#### SMRs deployable soon

DOC 11

(“The Commercial Outlook for¶ U.S. Small Modular Nuclear¶ Reactors” <http://www.trade.gov/publications/pdfs/the-commercial-outlook-for-us-small-modular-nuclear-reactors.pdf>, SEH)

Although SMRs have significant potential and ¶ the market for their deployment is growing, their ¶ designs must still go through the technical and ¶ regulatory processes necessary to ensure that ¶ they can be safely and securely deployed. Lightwater technology–based SMRs may not be ready ¶ for deployment in the United States for at least ¶ a decade, and advanced designs might be even ¶ further off**.** **Light-water SMRs and SMRs that have** ¶ **undergone significant testing are the most likely** ¶ **candidates for near-term deployment, because** ¶ **they are most similar to existing reactors that** ¶ **have certified designs and significant operating** ¶ **histories**. NuScale is on track to submit its reactor ¶ design to the NRC by 2012, as is Babcock & Wilcox ¶ for its mPower design. In addition, GE-Hitachi, ¶ which already completed an NRC preapplication ¶ review for its PRISM reactor in 1994, plans to submit its PRISM design for certification in 2012. ¶ With fierce competition for commercial deployment of U.S. SMRs anticipated, the U.S. government is accelerating its efforts to support the ¶ licensing of new reactor designs. The fiscal year ¶ 2011 budget request for the Department of Energy ¶ includes $39 million for a program to support ¶ design certification of SMRs for commercial deployment, as well as a research and development ¶ portfolio that will address the technology development needs of both near- and longer-term SMRs. ¶ **The Department of Energy is also in discussions** ¶ **with several U.S. companies to facilitate the lightwater SMR design certification by the NRC within** ¶ **a reasonable timeframe.** The department also ¶ continues to support research and development ¶ efforts toward advanced reactor designs through ¶ the Advanced Reactor Concepts program, which ¶ focuses on metal-cooled reactor technologies.

#### SMRs are cost-effective, safe, and can be quickly deployed

Szondy 12

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One way of getting around many of these problems is through the development of small modular reactors (SMR). These are reactors capable of generating about 300 megawatts of power or less, which is enough to run 45,000 US homes. Though small, SMRs are proper reactors. They are quite different from the radio-thermal generators (RTG) used in spacecraft and remote lighthouses in Siberia. Nuclear reactors such as SMRs use controlled nuclear fission to generate power while RTGs use natural radioactive decay to power a relatively simple thermoelectric generator that can only produce, at most, about two kilowatts.¶ In terms of power, RTGs are the equivalent of batteries while small nuclear reactors are only "small" when compared to conventional reactors. They are hardly the sort that you would keep in the garage. In reality, SMR power plants would cover the area of a small shopping mall. Still, such an installation is not very large as power plants go and a reactor that only produces 300 megawatts may not seem worth the investment, but the US Department of Energy is offering US$452 million in matching grants to develop SMRs and private investors like the Bill Gates Foundation and the company of Babcock and Wilcox are putting up money for their own modular reactor projects.¶ The 60-year old breakthrough¶ One reason for government and private industry to take an interest in SMRs is that they've been successfully employed for much longer than most people realize. In fact, hundreds have been steaming around the world inside the hulls of nuclear submarines and other warships for sixty years. They've also been used in merchant ships, icebreakers and as research and medical isotope reactors at universities. There was even one installed in the Antarctic at McMurdo Station from 1962 to 1972. Now they're being considered for domestic use.¶ The case for SMRs¶ SMRs have a number of advantages over conventional reactors. For one thing, SMRs are cheaper to construct and run. This makes them very attractive to poorer, energy-starved countries; small, growing communities that don't require a full-scale plant; and remote locations such as mines or desalination plants. Part of the reason for this is simply that the reactors are smaller. Another is that, not needing to be custom designed in each case, the reactors can be standardized and some types built in factories that are able to employ economies of scale. The factory-built aspect is also important because a factory is more efficient than on-site construction by as much as eight to one in terms of building time. Factory construction also allows SMRs to be built, delivered to the site, and then returned to the factory for dismantling at the end of their service lives - eliminating a major problem with old conventional reactors, i.e. how to dispose of them.¶ SMRs also enjoy a good deal of design flexibility. Conventional reactors are usually cooled by water - a great deal of water - which means that the reactors need to be situated near rivers or coastlines. SMRs, on the other hand, can be cooled by air, gas, low-melting point metals or salt. This means that SMRs can be placed in remote, inland areas where it isn't possible to site conventional reactors.¶ Safety¶ This cooling system is often passive. In other words, it relies more on the natural circulation of the cooling medium within the reactor's containment flask than on pumps. This passive cooling is one of the ways that SMRs can improve safety. Because modular reactors are smaller than conventional ones, they contain less fuel. This means that there's less of a mass to be affected if an accident occurs. If one does happen, there's less radioactive material that can be released into the environment and makes it easier to design emergency systems. Since they are smaller and use less fuel, they are easier to cool effectively, which greatly reduces the likelihood of a catastrophic accident or meltdown in the first place.¶ This also means that accidents proceed much slower in modular reactors than in conventional ones. Where the latter need accident responses in a matter of hours or minutes, SMRs can be responded to in hours or days, which reduces the chances of an accident resulting in major damage to the reactor elements.¶ The SMR designs that reject water cooling in favor of gas, metal or salt have their own safety advantages. Unlike water-cooled reactors, these media operate at a lower pressure. One of the hazards of water cooling is that a cracked pipe or a damaged seal can blow radioactive gases out like anti-freeze out of an overheated car radiator. With low-pressure media, there's less force to push gases out and there's less stress placed on the containment vessel. It also eliminates one of the frightening episodes of the Fukushima accident where the water in the vessel broke down into hydrogen and oxygen and then exploded.¶ Another advantage of modular design is that some SMRs are small enough to be installed below ground. That is cheaper, faster to construct and less invasive than building a reinforced concrete containment dome. There is also the point that putting a reactor in the ground makes it less vulnerable to earthquakes. Underground installations make modular reactors easier to secure and install in a much smaller footprint. This makes SMRs particularly attractive to military customers who need to build power plants for bases quickly. Underground installation also enhances security with fewer sophisticated systems needed, which also helps bring down costs.¶ SMRs can help with proliferation, nuclear waste and fuel supply issues because, while some modular reactors are based on conventional pressurized water reactors and burn enhanced uranium, others use less conventional fuels. Some, for example, can generate power from what is now regarded as "waste", burning depleted uranium and plutonium left over from conventional reactors. Depleted uranium is basically U-238 from which the fissible U-235 has been consumed. It's also much more abundant in nature than U-235, which has the potential of providing the world with energy for thousands of years. Other reactor designs don't even use uranium. Instead, they use thorium. This fuel is also incredibly abundant, is easy to process for use as fuel and has the added bonus of being utterly useless for making weapons, so it can provide power even to areas where security concerns have been raised.¶ But there's still the sticking point that modular reactors are, by definition, small. That may be fine for a submarine or the South Pole, but what about places that need more? Is the alternative conventional nuclear plants? It turns out that the answer is no. Modular reactors don't need to be used singly. They can be set up in batteries of five or six or even more, providing as much power as an area needs. And if one unit needs to be taken off line for repairs or even replacement, it needn't interfere with the operation of the others.

#### Obama has pushed SMRs

Kramer ‘12

(David J. Kramer was educated at Tufts University, receiving his B.A. in Soviet Studies and Political Science, and then at Harvard University, receiving his M.A. in Soviet Studies. “Romney, Obama surrogates spell out candidates’ energy policies” September 2012 Accessed online at http://www.physicstoday.org/resource/1/phtoad/v65/i9/p20\_s10, TSW)

The Obama administration’s support for nuclear power is evident from the $7 billion loan guarantee from DOE to back construction of two new reactors at an existing nuclear power plant in Georgia, Reicher noted. “There’s serious money going into small modular reactors and serious policy work going on in how to reform the licensing process” at the Nuclear Regulatory Commission to expedite approval.

#### DOE just massively increased payments for SMRs, but it fails.

DoD Energy Blog 11

DoD Energy Blog, 2/16/11, Good Things in Small Packages:Small Reactors for Military Power Good Things in Small Packages:Small Reactors for Military Power, dodenergy.blogspot.com/2011/02/good-things-in-small-packagessmall.html

They conclude that DOD should lead the charge for small reactors to meet their own needs as well as to make sure that the US leads that industry’s development. When first written the paper mentioned that most of the technology was stymied somewhere between the drawing board and production. But there is good news in the President’s 2011 Budget for nukes. The New York Times reported that the budget contains $500 million over five years for DOE to complete two designs and secure National Regulatory Commission (NRC) approval. The reactors will be built entirely in a factory and trucked to the site, like “modular homes”. Sounds just like what Dr. Andres ordered. Only problem is that $500 million is only about half of the cost to get to NRC approval**.** Actual production is in the $2 billion neighborhood, and that is a pricey neighborhood. Enter Amory Lovins. Amory has often derided the cost for nuclear power as an unnecessary expenditure. His argument is that micropower is the way of the future, not big honking gigawatt nuclear power plants. Although there has been a resurgence in the interest in nuclear power, it is still difficult to find private investments willing to underwrite the expense. Maybe the development of small nukes for national security reasons will lead to cost effective small nukes for distributed micropower nationwide. Small reactors for FOBs are more problematic. Even Bagram only needs about 25 MW with other FOBS being smaller. Security will be the first concern. If someone tries a smash and grab at Fort Hood they have to go through a couple of armored divisions and have a long way to got to get away. Kabul to Peshawar is only 128 miles. Cost shouldn’t be an overriding factor in considering secure power, but even at a 75% cost reduction in production, half a billion for 25MW is a bit much. Of course if you could produce a 300MW system, Bagram could air condition Kabul! The real soft power. My buddy, T.C. the fighter pilot, would tell you that DOD's mission is to fight and win the Nation's wars, not spark business recovery. DOD needs to focus on conserving energy. “Reducing the consumption at Miramar by 50% might save a lot of fuel and money, but I'd rather reduce consumption by 50% at PB Jugroom even though the savings in gallons and dollars are tiny.” Reducing demand reduces risk. All that being said, it may well be worth DOE and DOD efforts to explore the potential. It is something that may be beyond the means of commercial entities, but not government (See China). If there is going to be a market here, let us not be left behind as we have been with other alternative energy production means.

# 2AC - Block DA, CP, T Case

### Grid

#### Their evidence is only descriptive of the status quo our evidence is predictive of the severity of the next grid outage that’s Robitaille ’12 says china and Russia will attack, the grid is controlled by computers which are taken out in a cyber attack and the backstops their evidence talks about are being neglected

#### Solar storms hit all parts of the grid

Malouf 12

F. Michael Maloof, staff writer for WND and G2Bulletin, is a former senior security policy analyst in the office of the secretary of defense, Feds And Utilities Face Off Over The Electromagnetic Pulse Threat Coming In 2014

http://articles.businessinsider.com/2012-04-23/news/31384526\_1\_solar-storm-power-grid-nerc#ixzz25LP2rc

As scientists warn of an impending solar storm between now and 2014 that could collapse the national power grid, thrusting millions into darkness instantly, a debate has flared up between utilities and the federal government on the severity of such an event.¶ NASA and the National Academy of Sciences previously confirmed to G2Bulletin that an electromagnetic pulse event from an intense solar storm could occur any time between now and 2014.¶ They say it could have the effect of frying electronics and knocking out transformers in the national electric grid system.¶ Already, there are separate published reports of massive solar storms of plasma – some as large as the Earth itself – flaring off of the sun's surface and shooting out into space, with some recently having come close enough to Earth to affect worldwide communications and alter the flights of commercial aircraft near the North Pole.¶ But in February, the North American Electric Reliability Corporation, which represents the power industry, issued a stunning report asserting that a worst-case geomagnetic "super storm" like the 1859 Carrington Event likely wouldn't damage most power grid transformers. Instead, it would cause voltage instability and possibly result in blackouts lasting only a few hours or days, but not months and years.¶ NERC's assertion, however, is at serious variance with the 2008 congressional EMP Commission, the 2008 National Academy of Sciences report; a 2010 Federal Energy Regulatory Commission report; the 2012 report by the Defense Committee of the British Parliament, and others.¶ Even the British scientists who contributed to the parliament report came to their own independent assessment that a great geomagnetic storm would cause widespread damage to power grid transformers and result in a protracted blackout lasting months, or even years, with catastrophic consequences for society.¶ Despite NERC's assertion that there wouldn't be widespread damage to the nation's power grid transformers in the event of an intense solar storm, the FERC, which regulates interstate electricity and other energy sales but has no authority now over local utilities to harden their grid sites, says that as many as 130 million Americans could have problems for years.¶ NERC asserts that any blackout would last hours or days, at most.¶ "The FERC report relied on a four-part quantitative model of geomagnetic disturbance effects on the U.S. power grid to develop conclusions and recommendations, while the NERC report relied on meetings of industry employees in lieu of data collection or event investigation," according to Peter Vincent Pry, who heads the congressional quasi-legislative Task Force on National and Homeland Security. Pry also was staff director to the EMP Commission.¶ Pry said that the Task Force had issued its own report comparing the scientific methodology used in the industry-sponsored NERC report with that used in 2010 FERC report.¶ He pointed out that the NERC report was the product of a so-called Geomagnetic Disturbance Task Force with membership consisting only of representatives from electricity generation and transmission companies.¶ "In contrast to the FERC report, no expert on geomagnetic storms and natural electromagnetic pulse effects participated in actual drafting of the NERC report," Pry said.¶ He added that the FERC report used a "proven computer model" to predict specific geographic areas expected to experience power grid collapse during a major geomagnetic disturbance.¶ "The NERC report discussed how such models might be developed in the future," Pry said.¶ Pry was particularly critical of the "extraordinary and unsupported claim" in the NERC report that a likely collapse of the power grid would prevent transformer overheating and damage. Pry said that the FERC asserts that internal heating as a likely mechanism of transformer damage is based on prior actual geomagnetic disturbance events.¶ U.S. transformers on the average are more than 30 years old and are susceptible to internal heating, according to FERC experts. Other federal studies have revealed that the transformers have to be custom-made for local utilities and are constructed only overseas.¶ In addition, utilities do not keep around spare transformers due to their expense. The NERC report, however, does not discuss the age of the nation's transformers.¶ Nevertheless, there is ample evidence in the possession of the FERC revealing the damage to transformers from previous geomagnetic storms. For example, there was serious transformer damage to the Salem nuclear power plant in New Jersey in the aftermath of the same geomagnetic storm that caused the March 1989 Hydro-Quebec blackout. According to Pry, the NERC had removed any similar pictures from the published version of its report.¶ Even the Electric Infrastructure Security Council similarly has found fault with the NERC report. The EISC helps coordinate U.S. and international infrastructure protection against electromagnetic threats, whether natural or man-made.¶ Where the NERC report minimized the effect of a geomagnetic disturbance the EISC was highly critical of the NERC's conclusions.¶ "Upon careful review of the report, we were unable to find any supporting material for such a definitive claim, which appears to be a significant departure from all previous report drafts and, indeed, from all previous U.S. government studies," the EISC analysis said.¶ "We were disturbed to find that relevant data that could conflict with this conclusion has apparently been removed from the report, including photographs and other evidence of GMD transformer damage that appeared in previous report drafts," EISC said.¶

#### Terrorist can make bioweapon and planning attack – rogue states, smugglers and extremist groups

Axe ‘12

(David Axe is a military correspondent living in Washington, D.C. Since 2005 he has reported from Iraq, Lebanon, East Timor, Afghanistan and Somalia. He is a regular contributor to Wired, The Washington Times, C-SPAN and BBC Radio, among many other outlets. “From Bug Drones to Disease Assassins, Super Weapons Rule U.S. War Game” August 24, 2012 accessed online August 24, 2012 at http://www.wired.com/dangerroom/2012/08/future-warfare/all/)

CARLISLE, Pennsylvania — A rogue state is on the verge of developing a deadly biological weapon against which the rest of the world has no defense. Through its connections to extremist groups and smugglers, the regime could be planning to launch bio attacks on U.S. allies and interests.¶ With tensions mounting, a cabal of American military officers, intelligence agents, scientists, industry officials and theoreticians gather at a secure facility within the Defense Department’s oldest base. Their mission: to plot America’s response to the bio-weapon threat. The ideas — some good, some bad, a few downright horrifying — flow freely

#### Terrorists could pull a bioterror attack off– remote control planes, hijacking

Condron and Leake ‘12

(STEPHANIE CONDRON and CHRISTOPHER LEAKE of Daily Mail. Christopher Leake has been defence and home affairs editor at Mail on Sunday, UK communications director at tesco plc, Industrial and Consumer Affairs Editor at The Mail on Sunday, the daily telegraph, industrial correspondent at the daily telegraph, London, industrial corrrespondent at express & star¶ Reporter and Deputy Editor at West Cheshire Newspapers. “Poison drones carrying biological weapon are new Olympic threat, warns Colonel in charge of keeping London calm” UPDATED: 18:23 EST, 5 May 2012 accessed online August 25, 2012 at http://www.dailymail.co.uk/news/article-2140173/Poison-drones-new-Olympic-threat-warns-Colonel-charge-keeping-London-calm.html)

A senior Army officer has warned that unmanned drones carrying deadly poison could be used in a devastating terrorist attack during the Olympic Games.¶ Lieutenant Colonel Brian Fahy delivered the grim warning at a meeting intended to allay the fears of residents worried about the Army’s plans to place missiles on the rooftops of flats.¶ He said it was ‘feasible’ that remote-controlled aircraft filled with poison and small enough to fit into a backpack could be used as a biological weapon in the capital.¶ He told The Mail on Sunday: ‘An Unmanned Aerial Vehicle (UAV) can be put in a backpack. They come in all sorts of sizes and it’s feasible they could be filled with something noxious and flown by remote-control.’¶ ¶ Now there's a block of flats you wouldn't break into! Surface-to-air weapons are put in place to form an Olympic ring of steel to protect the Games¶ The biggest ship in London! HMS Ocean heads up the Thames in show of strength before the Olympics (as Defence Secretary warns: 'We would shoot down a jet if necessary')¶ Lieut Col Fahy – the officer responsible for community relations during the Games – made his remarks on Friday in Leytonstone, East London, near one of six sites which could see the deployment of surface-toair missile batteries in order to shoot down aircraft attempting to infiltrate an Olympic ‘no fly’ zone.¶ Fears: An unmanned drone could be used by terrorists to deliver a biological weapon strike, a senior army officer warned¶ During the meeting at Buxton School, his team showed locals a ‘dummy’ missile battery and allowed children to play on the unarmed weapon.¶ Lieut Col Fahy declined to elaborate on what type of poison might be used during an aerial attack.¶ He said: ‘For the duration of the Olympics anyone flying into controlled airspace is to file their flight plan with the Civil Aviation Authority.¶ ‘The range of threats varies in size and capability. It could be a commercial airliner hijacked by somebody with malicious intentions or a protest group using a microlight to get their name in the papers.’¶ His poison warning came as it was revealed that SAS troops have had anthrax emergency training at the Government’s top-secret military research establishment at Porton Down, Wiltshire.¶ Sources say the elite soldiers wore biochemical protection suits, gloves and masks during exercises over the past few months to prepare for any attack using the deadly bacteria.¶ Such an incident could threaten the lives of thousands of people attending the Games this summer.¶ Lieut Col Fahy told The Mail on Sunday: ‘We have worked up a comprehensive plan to protect against the potential hijacking of a commercial airliner down to slow-moving microlights or radio-controlled planes.’ ¶ Battle stations: The army placed a surface-to-air missile on top the Fred Wigg tower block in Waltham Forest, est London as part of a series of security tests for the 2012 Olympics¶ Asked if they would fire a missile at a protester flying a microlight near the Olympic site, Lieut Col Fahy said: ‘We would not take it out. For something like that we would scramble helicopters to go and look at it.¶ ‘There will be an RAF sniper on board if there was serious evidence to suggest something like that represented a threat. That information gets passed on and it’s a political decision to engage.¶ ‘It’s the same politicians who will decide whether we fire surface-to-air missiles at a potential threat. It’s a decision that I’m quite happy not to make. It will weigh very heavily.’¶ Defence Secretary Philip Hammond has made it clear he is ready to give the order to shoot down any aircraft threatening the Olympics with a 9/11-style attack.

#### Globalization guarantees spread and wipes out population with psychological and economic impacts that’s Lilliefors ’12

#### Biological weapons are the deadliest and easiest to use – New antibiotic immune strains and unmonitored labs

Akram ‘12

(Munir Akram is a former Pakistan ambassador to the UN. “Nuclear terror” accessed online August 24, 2012 at http://dawn.com/2012/06/24/nuclear-terror/)

Extensive bureaucratic and military machinery has been created within governments and at the UN to prevent the acquisition of nuclear weapons, materials or knowledge by terrorists and extremists.¶ Among states, Pakistan has encountered the greatest pressure to reassure the ‘international community’ that its nuclear weapons and materials are ‘safe’ and will not fall into the hands of terrorists and Islamic militants. Pakistan’s detractors next door and in western capitals have missed no opportunity to portray it as the most likely source of nuclear terrorism.¶ Nuclear weapons are devilishly complex to develop, deploy and use. India required five decades (1948-1998) to master the atomic bomb; Pakistan developed its capability over 24 years; North Korea acquired a primitive capability after 20 years.¶ Iran’s enrichment capacity has evolved in even slower motion. Terrorist organisations will find it virtually impossible to develop nuclear weapons by themselves.¶ No state is likely to share its nuclear weapons capability with non-state actors because their unaccountable use, or threat of use, of a nuclear weapon, would most certainly invite a retaliatory response endangering the very existence of the transferring state. Islamic jihadis may resort to suicide attacks; Islamic states are not suicidal.¶ Moreover, it is totally beyond the capability terrorist organisations to arm, aim and fire a nuclear weapon. These complex systems require the coordinated actions of an entire team of highly trained people to use them.¶ Numerous studies have established that if fissionable material were to be acquired, by theft or capture, by terrorists or other non-state actors, the most they could do with it is build and explode a radiation (dirty) bomb. Depending on population density, a dirty bomb’s casualties would number in the hundreds rather than thousands. In comparison, a ‘daisy-cutter’ — the conventional fire and concussion bomb used extensively in Afghanistan — would cause thousands of casualties¶ if dropped on a population centre.¶ The most destructive weapons a terrorist can acquire or build are chemical or biological weapons. Both are banned by international treaty. A system is in place to verify the chemical weapons ban. Not so for biological weapons. Thousands of laboratories remain immune from international inspection due to opposition from the US and some other industrial countries. Recent news reports that scientists have developed bacteria immune to antibiotics are not reassuring.¶ Since Hiroshima, ‘nuclear terror’ has been the monopoly of states. Today, nuclear terror emanates from the failure of states to address those security issues that could precipitate the deliberate or accidental use of nuclear weapons. There are at least five areas of ‘nuclear concern’.¶ The planned deployment of US Anti-Ballistic Missile systems in Europe could erode the stability of deterrence, based, since the Cold War, on the doctrine of Mutual Assured Destruction (MAD). Russia does not accept the American assurance that to be deployed ABMs are meant to shoot down Iranian rather than Russian missiles.¶ Although China faced nuclear threats in the early days, the nuclear equation has been a latent factor in China’s relations with both the US and Russia over the last four decades. This may change once the US implements its plans to deploy most of its naval forces to the Pacific and build a ring of alliances around China’s periphery. ABM systems could also be deployed by the US, Japan and India in the region. Unlike the US-Soviet Cold War relationship, there is no agreed doctrine to stabilise nuclear relations between China and the US.¶ In this context, the Korean peninsula is an especially dangerous nuclear ‘hot spot’. A weak, insecure and nuclear-armed North Korean regime confronts coercive efforts to denuclearise it. A miscalculation on either side could lead to a disastrous conflagration.¶ In the Middle East, the danger arises from coercive efforts to maintain Israel’s nuclear monopoly. Iraq’s nuclear endeavours have been obliterated. An alleged clandestine nuclear facility in Syria was destroyed by Israel three years ago. There is widespread speculation that Iran will be attacked before its enrichment programme moves into what the Israelis have called ‘the zone of immunity’. Iran’s direct and indirect retaliation will make the post-Arab Spring Middle East a most dangerous place.¶ The nuclear danger is pervasive in South Asia today. In 2004, Pakistan and India declared jointly that their acquisition of nuclear weapons had contributed to stability in South Asia. However, the nuclear parity which this declaration implied has been broken by three developments. The first and most important was the Indo-US Nuclear Cooperation Agreement which provided India a quantitative and a qualitative nuclear edge against Pakistan.¶ A second development was the publication of reports that the US has plans to seize Pakistan’s nuclear weapons if these were¶ in danger of being captured or taken over by Islamic radicals. Suffice it to say, plans to seize or destroy another country’s nuclear assets, and counter-measures to thwart this, do not mitigate the danger of conventional or non-conventional conflict.¶ The negative developments in Pakistan-US relations in 2011 validated and reinforced the dangerous strategic drift. Today, the relationship has passed into the zone of hostility at the popular and official level. It is entirely uncertain where the American insults, collaboration with our regional adversaries and talk of ‘losing patience’ with Pakistan will lead.¶ The history of the nuclear era reveals how often states have come, through blunder and miscalculation, to the brink of nuclear catastrophe. We continue to live with nuclear terror.

### water

#### Increased scarcity short-circuits diplomacy

Akhtar 10

Dr Shaheen Akhtar 10 – date inferred, research fellow at the Centre for Regional Studies, “Emerging Challenges To Indus Waters Treaty”, <http://irs.org.pk/f310.pdf>

The growing water stress in Pakistan and India is shaping discourse on water between the two countries. The increase in water stress in the two countries since the early 1990s has also put strain on the IWT. This debate is mainly driven by the growing demand, decreasing availability of fresh water resources and degree of their dependence on the transboundary water resources. Water scarcity is often measured using Falkenmark’s Water Stress Index (WSI) which divides the volume of available water resources for each country by its population. If the resulting average amount of water available per inhabitant falls short of a certain threshold value (1700 m3 per year) the country is considered to be “water stressed”, if falling short of 1,000 m3 per person per year, it is considered “water scarce” and finally, if falling short of 500 m3 per person per year, it is considered “water poor.”(28) Going by this Water Stress Index India has become a “water stressed” country while Pakistan a “water scarce” country.¶ In March 2009, a group of more than 20 different UN bodies warned that, since water has become the latest cause stoking tensions between India and Pakistan, the world may be perilously close to its first water war. The report observed that “water is linked to the crises of climate change, energy and food supplies and prices, and troubled financial markets.”….“Unless their links with water are addressed and water crises around the world are resolved, other crises may intensify and local water crises may worsen, converging into a global water crisis and leading to political insecurity and conflict at various levels.”(29) As such water has become a geopolitical issue in the ongoing hostility and rivalry and distrust between the two countries.

#### Ignore impact defense that does not account for current tensions.

**Bhalla 12**

(Nita, Staff Writer @ Reuters, *Thirsty South Asia's river rifts threaten "water wars"*, July 23rd, Lexis)

As the silver waters of the Kishanganga rush through this north Kashmir valley, Indian laborers are hard at work on a hydropower project that will dam the river just before it flows across one of the world's most heavily militarized borders into Pakistan.¶ The hum of excavators echoes through the pine-covered valley, clearing masses of soil and boulders, while army trucks crawl through the steep Himalayan mountain passes.¶ The 330-MW dam is a symbol of India's growing focus on hydropower but also highlights how water is a growing source of tension with downstream Pakistan, which depends on the snow-fed Himalayan rivers for everything from drinking water to agriculture.¶ Islamabad has complained to an international court that the dam in the Gurez valley, one of dozens planned by India, will affect river flows and is illegal. The court has halted any permanent work on the river for the moment, although India can still continue tunneling and other associated projects.¶ In the years since their partition from British India in 1947, land disputes have led the two nuclear-armed neighbors to two of their three wars. Water could well be the **next flashpoint**.¶ "There is definitely potential for conflict based on water, particularly if we are looking to the year 2050, when there could be considerable water scarcity in India and Pakistan," says Michael Kugelman, South Asia Associate at the Woodrow Wilson International Center for Scholars in Washington.¶ "Populations will continue to grow. There will be more pressure on supply. Factor in climate change and faster glacial melt ... That means much more will be at stake. So you could have a **perfect storm** which conceivably could be some sort of trigger.¶ It's not just South Asia -- water disputes are a global phenomenon, sparked by growing populations, rapid urbanization, increased irrigation and a rising demand for alternative power such as hydroelectricity.¶ **Turkey**, **Syria**, **Iran** and **Iraq** quarrel over the waters of the Tigris and Euphrates. The Jordan river divides **Israel**, **Jordan**, **Lebanon** and the **West Bank**. **Ten African countries** begrudgingly share the Nile.¶ In Southeast Asia, **China** and **Laos** are building dams over the mighty Mekong, raising tensions with downstream nations.¶ A U.S. intelligence report in February warned fresh water supplies are unlikely to keep up with global demand by 2040, increasing political instability, hobbling economic growth and endangering world food markets.¶ A "water war" is unlikely in the next decade, it said, but beyond that rising demand and scarcities due to climate change and poor management will increase the risk of conflict.¶ MAJOR THREAT¶ That threat is possibly nowhere more apparent than in South Asia, home to a fifth of humanity and rife with historical tensions, mistrust and regional rivalries.¶ The region's three major river systems - the Indus, the Ganges and the Brahmaputra - sustain **India** and **Pakistan's** breadbasket states and many of their major cities including New Delhi and Islamabad, as well as Bangladesh.¶ "South Asia is symbolic of what we are seeing in terms of water stress and tensions across the world," says B.G. Verghese, author and analyst at New Delhi's Centre for Policy Research.¶ The region is one of the world's most water-stressed, yet the population is adding an extra 25 million people a year - South Asia's per capita water availability has dropped by 70 percent since 1950, says the Asian Development Bank.¶ The effect of climate change on glaciers and rainfall patterns may be crucial.¶ "Most of the water that is used in Pakistan comes from glacial melt or the monsoon," says Rafay Alam, an environmental lawyer and coordinator of the water program at Lahore University of Management Sciences.¶ The dry months of June-July offer a snapshot of the extreme water crisis in the region.¶ Hospitals in New Delhi this year cancelled surgeries because they had no water to sterilize instruments, clean operating theatres or even wash hands. Swanky malls selling luxury brands were forced to switch off air conditioners and shut toilets.¶ In Pakistan, the port town of Gwadar ran out of water entirely, forcing the government to send two naval water tankers. Some government flats in the garrison city of Rawalpindi have not had water for weeks, said the local press.¶ India, as both an upper and lower riparian nation, finds itself at the centre of water disputes with its eastern and western downstream neighbors -- **Bangladesh** and Pakistan -- which accuse New Delhi of monopolizing water flows.¶ To the north and northeast, India fears the same of upstream China, with which it fought a brief border war in 1962. Beijing plans a series of dams over the Tsangpo river, called the Brahmaputra as it flows into eastern India.

#### Thousands of years of data prove it doesn’t lead to coop

Glecik 9

<http://seedmagazine.com/content/article/the_truth_about_water_wars/> Peter Gleick is co-founder and president of the Pacific Institute in Oakland, California, and a member of the World Economic Forum Global Agenda Council on Water Security and the UN’s Expert Group on Policy Relevance of the World Water Assessment Program. He is editor of the biennial book The World’s Water and has recently begun blogging at Water By the Numbers.

Far more important, and far easier to answer, is the question: Is there any connection between fresh water and conflict, including violent conflict? And the answer has to be an unambiguous “yes.” History going back 5,000 years is rife with examples where water has been a goal of violence, a target or tool of conflict, or a source of disputes and political strife. Our Water Conflict Chronology, at worldwater.org, lists hundreds of these examples. And if there is a strong connection between water and conflicts, two new questions come up: Are the risks of these conflicts growing, and how can we reduce them? I think the answer to the first is, yes, the risks of water-related conflicts appears to be growing.

### Solvency

#### We have expertise – Navy hired 700 nuclear engineers and new projects spark interest

Wheeler 10/12

(Brian graduated from Northeastern State University in Tahlequah, Okla., in 2005 with a Bachelor’s degree in Mass Communication. He majored in Journalism and minored in Speech Communication. Since graduation, Brian has worked as a newspaper reporter, a magazine freelance writer and most recently as a television news photojournalist and web reporter. Working in television taught Brian how to complete stories in a short time span with breaking news occurring daily. After three years in T.V. news, he joined the PennWell publishing team in March 2010.¶ Brian serves as Editor of Nuclear Power International and Senior Editor of Power Engineering. He also serves as a committee member for the Nuclear Power International Conference and Exhibition and COAL-GEN. “Special Report: Nuclear Power Executive Roundtable” Oct 12, 2012 <http://www.power-eng.com/articles/2012/10/special-report-nuclear-power-executive-roundtable.html>, TSW)

Cheri also mentioned the Navy agreement signed in August in Atlanta. I just got an email stating that 11 officers coming out of the Navy are looking for jobs in the nuclear industry. That’s the first of many, I believe to facilitate the workforce development in our industry.¶ Ashley: We have actually seen a definite resurgence of interest in the nuclear industry. That, and our workload has enabled us to hire about 700 engineers to support our nuclear business line over the past two years. About 25 percent of those were college hires. It wasn’t that long ago when we couldn’t really interest a college hire to come into the nuclear industry. That has changed.¶ There is a strong interest in terms of young engineers taking a more active role in the nuclear industry. At Bechtel, we have over 250 active members in North America Young Generation Nuclear. Those are mostly young engineers and professional under the age of 35. It is very active, and we see that as a developing group that is going to be the future of our industry. In June, we hosted a conference for the Mid-Atlantic region of NAYGN that included about 20 different chapters. Individuals from various companies came to Bechtel Power’s Frederick, Md. office, and participated on their own time. It started Friday night and it was over the weekend. That shows the enthusiasm that this group has for commercial nuclear. I am very optimistic that if we can keep them interested, we can build the next generation of engineers.¶ We also have nearly 200 members of Women in Nuclear and, once again, that shows the diversity of nuclear engineers and gives me reason for optimism. That is one of Bechtel’s strongest missions: preparing the future generation to not only take over supporting the operation of our existing fleet, but also the design and construction of new plants.¶

### T

#### 1-We meet – we spend money – means it’s a financial incentive

#### 2-Counter Interp – financial incentives include procurement

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 useof 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, the****definition 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**.

#### 3 Their interp is bad

#### A Limits – overlimits to only basic industry affs, no military affs are possible

#### B Ground – military affs are key to check against the states counterplan

#### 4 Lit checks the abuse – SMRs are done with procurement

#### 5 Reasonability checks – we spend money and do nuclear poewr

#### 6 T isn’t a voter

### DA

#### No link Seawater mining increasing Uranium supplies

Prigg 8/21

(Mark Prigg “Are oceans the future of nuclear power? Scientists move closer to extracting uranium from seawater” 11:17 EST, 21 August 2012 <http://www.dailymail.co.uk/sciencetech/article-2191571/Do-oceans-hold-future-nuclear-power-Scientists-closer-extracting-uranium-seawater.html>, TSW)

Extracting uranium from seawater is closer to becoming an economic reality which could guarantee the future of nuclear power, scientists said today.¶ The world's oceans hold at least four billion tons of the precious metal.¶ But for the past four decades, the goal of mining seawater for uranium has remained a dream because of the technical difficulties and high cost.¶ Today, a report presented to a scientific meeting showed that fast progress is being made towards turning the oceans into a uranium reservoir.¶ Sizewell B Nuclear Power Station: Researchers believe that uranium in the sea could be the future of nuclear power¶ Improvements to the extraction technology have almost halved production costs from around 560 dollars (£355) per pound of uranium to 300 dollars (£190).¶ Dr Robin Rogers, from the University of Alabama, told the annual meeting of the American Chemical Society in Philadelphia: 'Estimates indicate that the oceans are a mother lode of uranium, with far more uranium dissolved in seawater than in all the known terrestrial deposits that can be mined.¶ 'The difficulty has always been that the concentration is just very, very low, making the cost of extraction high.¶ 'But we are gaining on that challenge.'¶ The standard extraction technique, developed in Japan, uses mats of braided plastic fibres embedded with compounds that capture uranium atoms.¶ Each mat is 50 to 100 yards long and suspended 100 to 200 yards under the water. ¶ After being brought back to the surface, the mats are rinsed with a mild acid solution to recover the uranium. ¶ They are then dunked in the water again in a process that can be repeated several times.¶ The new work involves making cheaper and more efficient versions of the mats and the compounds that latch onto uranium.¶ A team led by Dr Rogers is exploring the use of waste shrimp shells from the seafood industry to produce a biodegradable mat material.¶ Dr Erich Schneider, from the University of Texas, another speaker at the American Chemical Society symposium, said the aim was to establish seawater uranium as an 'economic backstop' that will sustain the nuclear power industry.¶ The world's oceans are a rich source of uranium - and scientists believe they may have found a way to extract it¶ Nuclear power plants are built to operate for 60 years or longer and involve a huge investment, he told the meeting. ¶ Before committing themselves to building nuclear plants, energy companies had to be sure they can source reasonably priced uranium for many decades to come.¶ 'This uncertainty around whether there's enough terrestrial uranium is impacting the decision-making in the industry, because it's hard to make long-term research and development or deployment decisions in the face of big uncertainties about the resource,' said Dr Schneider. ¶ 'So if we can tap into uranium from seawater, we can remove that uncertainty.'¶ Seawater extraction of uranium may also have environmental advantages, the meeting heard.¶ Traditional uranium mining produced contaminated wastewater and posed health risks for miners.

#### No reprocessing SMRS use waste

Szondy ‘12

(David Szondy is a freelance writer based in Monroe, Washington. An award-winning playwright, he has contributed to Charged and iQ magazine and is the author of the website Tales of Future Past. “Feature: Small modular nuclear reactors - the future of energy?” February 16, 2012 accessed online August 22, 2012 at http://www.gizmag.com/small-modular-nuclear-reactors/20860/)

SMRs can help with proliferation, nuclear waste and fuel supply issues because, while some modular reactors are based on conventional pressurized water reactors and burn enhanced uranium, others use less conventional fuels. Some, for example, can generate power from what is now regarded as "waste", burning depleted uranium and plutonium left over from conventional reactors. Depleted uranium is basically U-238 from which the fissible U-235 has been consumed. It's also much more abundant in nature than U-235, which has the potential of providing the world with energy for thousands of years. Other reactor designs don't even use uranium. Instead, they use thorium. This fuel is also incredibly abundant, is easy to process for use as fuel and has the added bonus of being utterly useless for making weapons, so it can provide power even to areas where security concerns have been raised.

#### SMR key to nuclear leadership

Rosner and Goldberg 11

(Robert Rosner, astrophysicist and founding director of the Energy Policy Institute at Chicago. He was the director of Argonne National Laboratory from 2005 to 2009, Stephen Goldberg, Special Assistant to the Director, Argonne National Laboratory ¶ Senior Fellow, Energy Policy Institute at Chicago¶ Research Coordinator, Global Nuclear Future Initiative ¶ American Academy of Arts and Sciences, “Small Modular Reactors – Key to Future Nuclear Power ¶ Generation in the U.S.” Energy Policy Institute at Chicago, <http://csis.org/files/attachments/111129_SMR_White_Paper.pdf>, SEH)

As stated earlier, SMRs have the potential to achieve significant greenhouse gas emission ¶ reductions. They could provide alternative baseload power generation to facilitate the retirement ¶ of older, smaller, and less efficient coal generation plants that would, otherwise, not be good ¶ candidates for retrofitting carbon capture and storage technology. They could be deployed in ¶ regions of the U.S. and the world that have less potential for other forms of carbon-free ¶ electricity, such as solar or wind energy. There may be technical or market constraints, such as ¶ projected electricity demand growth and transmission capacity, which would support SMR ¶ deployment but not GW-scale LWRs. From the on-shore manufacturing perspective, a key point ¶ is that the manufacturing base needed for SMRs can be developed domestically. Thus, while the ¶ large commercial LWR industry is seeking to transplant portions of its supply chain from current ¶ foreign sources to the U.S., the SMR industry offers the potential to establish a large domestic ¶ manufacturing base building upon already existing U.S. manufacturing infrastructure and ¶ capability, including the Naval shipbuilding and underutilized domestic nuclear component and ¶ equipment plants. The study team learned that a number of sustainable domestic jobs could be ¶ created – that is, the full panoply of design, manufacturing, supplier, and construction activities – ¶ if the U.S. can establish itself as a credible and substantial designer and manufacturer of SMRs. ¶ While many SMR technologies are being studied around the world, a strong U.S. ¶ commercialization program can enable U.S. industry to be first to market SMRs, thereby serving ¶ as a fulcrum for export growth as well as a lever in influencing international decisions on ¶ deploying both nuclear reactor and nuclear fuel cycle technology. A viable U.S.-centric SMR ¶ industry would enable the U.S. to recapture technological leadership in commercial nuclear ¶ technology, which has been lost to suppliers in France, Japan, Korea, Russia, and, now rapidly ¶ emerging, China.

#### US dominance in SMR’s key to nuclear leadership which prevents proliferation

Loudermilk 11

(Micah J. Loudermilk is a Research Associate for the Energy & Environmental Security Policy program with the Institute for National Strategic Studies at National Defense University, “Small Nuclear Reactors and US Energy Security: Concepts, Capabilities, and Costs” Journal of Energy Security, May 2011, <http://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>, SEH)

Combating proliferation with US leadership¶ 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.¶ As to the small reactors themselves, the designs achieve a degree of proliferation-resistance unmatched by large reactors. Small enough to be fully buried underground in independent silos, the concrete surrounding the reactor vessels can be layered much thicker than the traditional domes that protect conventional reactors without collapsing. Coupled with these two levels of superior physical protection is the traditional security associated with reactors today. Most small reactors also are factory-sealed with a supply of fuel inside. Instead of refueling reactors onsite, SMRs are returned to the factory, intact, for removal of spent fuel and refueling. By closing off the fuel cycle, proliferation risks associated with the nuclear fuel running the reactors are mitigated and concerns over the widespread distribution of nuclear fuel allayed.

### Solar CP

#### Perm do both

#### Perm do the CP

#### Can’t solve water wars solar can’t desalinate and the plan is key to export SMRs that’s rosner and Goldberg ‘11

#### Can’t solve—systems disconnect during grid failure

Kwartin et. al 12 (Vice president of ICF International, consulting firm that partners with government and commercial clients to deliver professional services and technology solutions in the energy, environment, and infrastructure; health, social programs, and consumer/financial; and public safety and defense markets, Robert Kwartin, Sarah Alexander, Martin Anderson, Donald Clark, John Collins, Chris Lamson, Garrett Martin, Ryan Mayfield, Lindsay McAlpine, Daniel Moreno, Jeffrey Patterson, Craig Schultz, and Emily Stiever, “Solar Energy Development on Department of Defense Installations in the Mojave and Colorado Deserts”, January, Pdf)

Developing an on-installation generation and distribution system that can operate in islanded mode is a complex undertaking and the DoD is currently demonstrating a number of different approaches. Generation equipment connected to the installation distribution system must be capable of operating in island mode and designed so that it does not disconnect automatically when the utility grid connection fails. This is particularly the case for PV systems. Most solar PV inverters disconnect automatically for safety reasons when they sense a grid failure; among other things, this protects utility personnel working to restore the grid from getting shocked. A PV system intended for islanded operation needs to be designed so that it continues to operate even when the larger public grid is down, and all issues related to safety of operation need to be addressed.

#### Intermittency and can’t supply enough power

Snider 12 (Annie, Environment & Energy Publishing, “Clean energy doesn't always bring security for military”, 1/27, http://www.eenews.net/public/Greenwire/2012/01/27/1)

While it is widely known that renewable power is intermittent -- solar panels produce power only when the sun is shining and turbines yield juice only when the wind blows -- many people don't realize that photovoltaics won't even turn on unless they are connected to the grid or a battery.¶ "If you have a bunch of renewables, you have to have some element of standard generation" to keep feeding power to a base that is disconnected from the commercial grid, Morrissett said. "If it's not tied back ... it's just going to sit there until it sees the grid power come back on."¶ The military is keenly interested in smart microgrids that can let energy managers respond quickly to changes in renewable energy generation and send limited amounts of power to the most important facilities.¶ Consider this scenario: The commercial grid is down, so the base is running its cogeneration plant and 5 megawatts of photovoltaics at full tilt. Then, clouds pass, and suddenly 5 megawatts of power is gone.¶ "You have to be able to [manage loads] not just in a second, but in milliseconds," Morrissett said. If not, he explained, the cogeneration plant will overload and shut off automatically.¶ That is why no one at the Pentagon is publicly talking about doing away with traditional sources like commercial grid power and backup diesel generators. DOD energy officials say renewable power can be an important piece of a base's overall power portfolio, but there are limits to how much of the load it can shoulder.

#### Solar development kills desert tortoise

Lovich & Ennen ‘11

Jeffrey and Joshua, “Wildlife Development and Solar Energy Development in the Desert Southwest, United States,” Bioscience Volume 61 No. 12 Pages 982-992 <http://www.avhidesert.com/pdf/downloaded_file-1.pdf>

Habitat fragmentation. **Until relatively recently, the desert Southwest was characterized by large blocks of continuous and interconnected habitat**. Roads and urban development continue to contribute to habitat fragmentation in this landscape. **Large-scale energy development has the potential to add to and exacerbate the situation, presenting potential barriers to movement and genetic exchange in wildlife populations, including** those of bighorn sheep (Ovis canadensis), deer (Odocoileus spp.), **tortoise**s, and other species of concern and social significance. Research conducted on the effects of oil and gas exploration and development (OGED) on wildlife in the Intermountain West provides a possible analog to USSEDO, since comparable data are not available for the desert Southwest. **The potential effects** on mule deer (Odocoileus hemionus) and other wildlife species **include impediments to free movement, the creation of migration bottlenecks, and a reduction in effective winter range size.** Mule deer responded immediately to OGED by moving away from disturbances, with no sign of acclimation during the three years of study by Sawyer and colleagues (2009). Some deer avoidance resulted in their use of lesspreferred and presumably less-suitable habitats. Despite a lack of data on the direct contributions of USSEDO to habitat fragmentation, USSEDO has the potential to be an impediment to gene flow for some species. Although the extent of this impact is, as yet, largely unquantified in the desert, compelling evidence for the effects of human-caused habitat fragmentation on diverse wildlife species has already been demonstrated in the adjacent coastal region of southern California (Delaney et al. 2010).

#### Desert Tortoise is a keystone species, keeps hundreds of species alive and soil correct

Becker ’12

Kendall is an environmental researcher at the University of Washington, “Renewable Energy, Fire, and the Agassiz’s Desert Tortoise,” <http://scienceinshort.wordpress.com/2012/03/13/renewable-energy-fire-and-the-agassizs-desert-tortoise/>

**At the forefront of this debate is the Agassiz’s desert tortoise. The tortoise is a keystone species; the desert ecosystem revolves around the tortoises’ propensity to burrow. “Literally hundreds of other desert animals benefit from tortoise burrows,” says Dr.** Jeffrey **Lovich, director of the Southwest Biological Science Center** in Flagstaff, Arizona. Voles, enda**ngered lizards, and even rattlesnakes seek shady homes in burrows of dimensions they are incapable of engineering on their own**. **Still more critical to the desert ecosystem is the churning of the soil that occurs as tortoises dig these tunnels**. In an environment devoid of worms, **desert plants rely on tortoises to stir up the soil so more water and oxygen can reach plant roots**. In recent decades desert tortoise numbers have plummeted as encroaching civilization and industry fragment their habitat. **Where a full 1,000 tortoises used to populate each square kilometer, now as few as 100 remain**. With the California Bureau of Land Management currently reviewing 22 applications for solar energy permits, the question of how these facilities impact tortoises and, by extension, the entire desert ecosystem, is a pressing one.

#### Extinction

Fraser 10

(Caroline, "Could Re-Wilding Avert the 6th Great Extinction?," 1/5, Scientific American, Adapted from the book REWILDING THE WORLD: Dispatches from the Conservation Revolution by Caroline Fraser, <http://www.scientificamerican.com/article.cfm?id=could-re-wilding-avert-6th-great-extinction>)

Why do species matter? Why worry if some go missing? Part of the answer lies in the relationships coming to light between creatures like the canyon coyotes and the chaparral birds. After the nineteenth century’s great age of biological collecting, when collectors filled museums to bursting with stuffed birds and pinned beetles, the twentieth and twenty-first centuries have proved to be an age of connecting. Biologists have begun to understand that nature is a chain of dominoes: If you pull one piece out, the whole thing falls down. Lose the animals, lose the ecosystems. Lose the ecosystems, game over. This was the essential insight of conservation biology, a new scientific field launched with the determination to identify threats to ecosystems and to design the methods to deal with them. E. O. Wilson has called it “a discipline with a deadline.” The Society for Conservation Biology, founded in 1985, became one of the fastest-growing scientific organizations of its time, bringing together diverse specialties from ecology and population genetics to sustainable agriculture and forestry, revolutionizing the once sleepy field of natural history. The tremendous variety of species held in wilderness areas, particularly the tropics, is our bank and lifeline, our agricultural and medical insurance policy. Three-quarters of the world’s food supply comes from twelve plant species, but those species are dependent on thousands of others: pollinators (insects, bats, birds), soil microbes, nitrogen-fixing bacteria, and fungi. The tropical rain forests contain a pool of genetic diversity for important food crops, a source for vital new strains that can be hybridized to fight pests and diseases. Botanists are combing the planet for wild ancestors of soybeans, tomatoes, hard wheat, and grapes, believed to contain valuable genes for drought tolerance and other characteristics, but much diversity has already been lost. Genetic engineering alone cannot replace what hundreds of millions of years of evolution have given us. Wild replacements for pineapples, pomegranates, olives, coffee, and other crops lie in biodiversity-rich areas that must be saved. In terms of medicine, our most important modern pharmaceuticals, including quinine, morphine, aspirin, penicillin, and many other antibiotics, are derived from microbes, plants, and animals found in tropical and marine environments. The first comprehensive scientific treatise on our reliance on other species, Sustaining Life: How Human Health Depends on Biodiversity, published in 2008, confirmed the importance of genetic variety, describing groups of threatened organisms crucial to agriculture and human medicine. Predictably, our close relatives, primates, make up a key group. Contributing to work on smallpox, polio, and vaccine development, primates allow research on potential treatments for hepatitis C and B, Ebola and Marburg viruses, and HIV/AIDS. The list of threatened plants and animals we rely on is weird and varied, including amphibians, bears, gymnosperms (the family of plants that includes pine trees), cone snails, sharks, and horseshoe crabs. Cone snails, a large genus of endangered marine mollusks, inject their prey with paralyzing toxins that are prized in medical research for their use in developing pain medications for cancer and AIDS patients who are unresponsive to opiates. The blood of the horseshoe crab, which carries antimicrobial peptides that kill bacteria, is being tested in treatments for HIV, leukemia, prostate cancer, breast cancer, and rheumatoid arthritis; it also yields cells crucial in developing tests to detect bacteria in medical devices, and its eyes have allowed Nobel Prize–winning researchers to unravel the complexities of human vision. Cone snails and horseshoe crabs are exactly the kinds of species that people tend to dismiss, seeing no utility in them, no connection to human need. This was the attitude expressed in 1990 by Manuel Lujan Jr., secretary of the interior during the George H. W. Bush administration, who asked in exasperation, “Do we have to save every subspecies?” It was the attitude expressed in 2008 by presidential candidate John McCain, who repeatedly declared his opposition to the funding of research on grizzly bear DNA. He got a cheap laugh whenever he said, “I don’t know if that was a paternity issue or a criminal issue.” Medical researchers were not laughing: bears, too, are essential to human medicine. Bear bile yields ursodeoxycholic acid, now used in treating complications during pregnancy, gallstones, and severe liver disease. Denning bears enter a period of lethargy during the winter and recycle body wastes in a process unique in mammals; this process is studied for insights in treating osteoporosis, renal disease, diabetes, and obesity. If species are crucial to medicine, ecosystems are indispensable to the health of the planet. Ecosystems provide the most basic provisioning services— food, firewood, and medicines—along with the so- called regulating services of a fully functional environment, which include cleaning the air, purifying water, controlling floods and erosion, storing carbon, and detoxifying pollutants in soils. When ecosystems are lost, as they have been through felling of forests and conversion of landscape to agriculture on a vast scale, havoc ensues, triggering human and natural catastrophe on an unprecedented scale.

#### Renewables don’t solve- DOD cheats

Sater ‘11

(Daniel, Research Fellow at Global Green USA’s Security and Sustainability Office in ¶ Washington, DC in the summer of 2011. He is a graduate student at the Frank Batten School of ¶ Leadership and Public Policy at the University of Virginia. Daniel holds a BA in Foreign Affairs ¶ from UVA and will receive his Master of Public Policy degree in May 2012. “Military Energy Security: Current Efforts and Future Solutions” <http://www.globalgreen.org/docs/publication-185-1.pdf>, SEH)

In 2008, the DOD acquired 2.9% of its electricity from renewable sources, falling just below the ¶ goal but surpassed the 3% goal in 2009 with 3.6% of its electricity coming from renewable ¶ sources.¶ 36¶ However, these numbers are deceiving. The DOD was only able to surpass this goal ¶ with the purchase of Renewable Energy Certificates. ¶ When a renewable energy source creates electricity, it creates two commodities: the electricity ¶ itself and a Renewable Energy Certificate. The utility (or whomever owns the energy source) can ¶ sell the electricity and the certificate together in a process called bundling or separately, known ¶ as unbundled energy. For example, if a military base has a solar array that produces 1MW of ¶ electricity, it also creates a certificate for 1MW of electricity. If the base sells the electricity it ¶ creates back to the utility, but keeps the certificate, the base can count the 1MW credit towards ¶ the renewable energy goal. If the base uses the electricity and keeps the certificate, it can count ¶ 2MW towards the goal. Finally, if the base sells the electricity and the certificate, it cannot count ¶ either towards its renewable energy goal. A base can also buy unbundled electricity (the credit or the actual electricity) or bundled electricity from a utility. The problem with only buying the ¶ certificate is that the base still must purchase electricity to power the installation. In meeting its renewable energy goal, the DOD does not distinguish between buying Renewable ¶ Energy Certificates and the actual use of renewable energy. The Army with 2.1% and Navy with ¶ 0.6% were well below the 3% goal, and the DOD was only able to surpass the goal because the ¶ Air Force consumed 5.8% of its electricity from renewable sources, but this figure comes mainly ¶ from the purchase of credits.¶ 38¶ The DOD’s FY 2009 Annual Energy Management Report does ¶ not specify what percentage of the energy use came from certificates but does make special ¶ mention of the Air Force’s purchase of certificates. However, the GAO reports that 90% of the ¶ DOD’s renewable energy use came from the purchase of certificates in 2007.¶ 39

### Cap (Short)

#### 1. Case outweighs and is a disad to the K.

#### a. Cyber attack coming in the next 3 years and grid will go down that’s huff 12 and robitaille ‘12 that takes out surveillance capabilities which are preventing terrorists in the squo that’s Defense Science Board ’08 and wagner 9/11 and we can’t get off the grid because of lack of coordination that’s GAO ’09 means guaranteed extinction from bioterror attack with the weapons terrorists groups obtain from Syria that’s Blair 12 and Lilliefors ’12

#### b. Water scarcity that is coming now that’s Dinar et al 10/18 SMRs solve by creating desalination plants that descalate conflict that’s IAEA 07 and palley ’11 tensions over water lead to indo pak war that escalates to extinction Priyadarshi 12 Zahoor ‘11 Chaffin ’11

#### c. Life should be valued as apriori – it precedes the ability to value anything else

Kacou ‘08

Amien Kacou. 2008. WHY EVEN MIND? On The A Priori Value Of “Life”, Cosmos and History: The Journal of Natural and Social Philosophy, Vol 4, No 1-2 (2008) cosmosandhistory.org/index.php/journal/article/view/92/184

Furthermore, that manner of **finding things good** that is in pleasure **can certainly not exist in any world without consciousness (i.e., without “life,”** as we now understand the word)—slight analogies put aside. In fact, we can begin to develop a more sophisticated definition of the concept of “pleasure,” in the broadest possible sense of the word, as follows: it is the common psychological element in all psychological experience of goodness (be it in joy, admiration, or whatever else). In this sense, pleasure can always be pictured to “mediate” all awareness or perception or judgment of goodness: there is pleasure in all consciousness of things good; pleasure is the common element of all conscious satisfaction. In short, it is simply the very experience of liking things, or the liking of experience, in general. In this sense, **pleasure is, not only uniquely characteristic of life but also, the core expression of goodness in life—the most general sign or phenomenon for favorable conscious valuation**, in other words. This does not mean that “good” is absolutely synonymous with “pleasant”—what we value may well go beyond pleasure. (The fact that we value things needs not be reduced to the experience of liking things.) However, what we value beyond pleasure remains a matter of speculation or theory. Moreover, we note that a variety of things that may seem otherwise unrelated are correlated with pleasure—some more strongly than others. In other words, there are many things the experience of which we like. For example: the admiration of others; sex; or rock-paper-scissors. But, again, what they are is irrelevant in an inquiry on a priori value—what gives us pleasure is a matter for empirical investigation. Thus, we can see now that, in general, **something primitively valuable is attainable in living—that is, pleasure itself.** And it seems equally clear that we have a priori logical reason to pay attention to the world in any world where pleasure exists. Moreover, **we can now also articulate a foundation for a security interest in our life: since the good of pleasure can be found in living** (to the extent pleasure remains attainable),[17] **and only in living, therefore, a priori, life ought to be continuously (and indefinitely) pursued at least for the sake of preserving the possibility of finding that good.** However, this platitude about the value that can be found in life turns out to be, at this point, insufficient for our purposes. It seems to amount to very little more than recognizing that our subjective desire for life in and of itself shows that life has some objective value. For what difference is there between saying, “living is unique in benefiting something I value (namely, my pleasure); therefore, I should desire to go on living,” and saying, “I have a unique desire to go on living; therefore I should have a desire to go on living,” whereas the latter proposition immediately seems senseless? In other words, “life gives me pleasure,” says little more than, “I like life.” Thus, we seem to have arrived at the conclusion that **the fact that we already have some (subjective) desire for life shows life to have some (objective) value.** But, if that is the most we can say, then it seems our enterprise of justification was quite superficial, and the subjective/objective distinction was useless—for all we have really done is highlight the correspondence between value and desire. Perhaps, our inquiry should be a bit more complex.

#### 2. Either the alt doesn’t do the aff and then the case is a disad to the alternative, or it does the aff and is a floating pic which are bad for fairness and education

#### 4. Perm do the plan and all non-mutually exclusive parts of the alternative

#### 5. Perm do the plan and the alt in all other instances. Either the alt only rejects the aff and can’t overcome the squo or the alt can and the perm shields the link.

#### 6. Perm do both If the alternative solves then it can solve any residual links to the perm.

#### 7. Capitalism isn’t dead and its inevitable – empirically economic panics show resilience/innovation of the system

Walter Russell Mead, 2008. James Clarke Chace Professor of Foreign Affairs and Humanities at Bard College , The Australian, “Boom and bust the way of the West”, Dec 5, 2008,

And those 300 years have been marked by one financial crisis after another. Even before the English began to dominate global markets, the Dutch suffered though the tulip bubble of the 17thcentury. There was the South Sea bubble of the early 18th century. There were the panics of the Napoleonic wars, followed by successive and intensifying panics and crashes during the 19th century. **Financial crises have continued throughout the 20th century and now into the 21st. And none of those panics and crashes interrupted or fundamentally altered the liberal capitalist path of development**. It is possible, of course, that this time is different, but **history gives us sound reason to believe that this kind of economic crisis does not mean the system is failing or has failed.** Indeed, **economic crisis is intrinsic to the capitalist economic system. It's not pleasant, but it is a regular and inevitable part of our lives.** This is **because the essence of capitalism is change.** Capitalism constantly forces us to innovate, to do things differently, and as the economy changes we no longer understand it as well as we once did. In the past 25 years we have seen a series of revolutionary changes taking place in financial markets. **We have seen extraordinary progress in the way information technology has been harnessed for the purposes of market trading. There have been new kinds of securities developed.** The crisis occurred because market participants and regulators no longer fully understand how the toe bone is connected to the foot bone in an international financial crisis. But **none of this means capitalism has failed; it means capitalism is succeeding. The history of the world economy shows us that crisis and panic have been our teachers. It is only through the study of past crashes that we have been able to understand risks and trade-offs in markets. We will come to grips with our past failures and figure out ways to protect against the problems that have landed us here, at least until markets develop a new level of complexity that defeats us and leads to yet another meltdown.**

#### 8. Transition wars

#### a. The alt causes backlash

Anderson ‘84.

professor of sociology – UCLA, ’84 (Perry, In the tracks of historical materialism, p. 102-103)

That background also indicates, however, what is essentially missing from his work. How are we to get from where we are today to where he point us to tomorrow? There is no answer to this question in Nove. His halting discussion of “transition” tails away into apprehensive admonitions to moderation to the British Labor Party, and pleas for proper compensation to capitalist owners of major industries, if these are to be nationalized. Nowhere is there any sense of what a titanic political change would have to occur, with what fierceness of social struggle, for the economic model of socialism he advocates ever to materialize. Between the radicalism of the future end-state he envisages, and the conservatism of the present measures he is prepared to countenance, there is an unbridgeable abyss. How could private ownership of the means of production ever be abolished by policies less disrespectful of capital than those of Allende or a Benn, which he reproves? What has disappeared from the pages of The Economics of Feasible Socialism is virtually all attention to the historical dynamics of any serious conflict over the control of the means of production, as **the record of the 20th century demonstrates** them. **If capital could visit such destruction on even so poor and small an outlying province of its empire in Vietnam, to prevent its loss, is it likely that it would suffer its extinction meekly in its own homeland? The lessons of the past sixty-five years or so are in this respect** without ambiguity or exception, there is no case, from Russia to China, from Vietnam to Cuba, from Chile to Nicaragua, **where the existence of capitalism has been challenged,** and **the furies of intervention**, blockade and civil strife **have not descended in response. Any viable transition to socialism in the West must seek to curtail that pattern:** but to **shrink from or to** ignore it is to depart from the world of the possible altogether. In the same way, **to construct an economic model of socialism in one advanced country is a legitimate exercise: but to extract it from any computable relationship with a surrounding, and necessarily opposing, capitalist environment—as this work does—is to locate it in thin air**.

#### b. That causes extinction

Kothari ‘82

Kothari, profrssor of political science – University of Delhi, ‘82¶ (Rajni, Towards a Just Social Order, Alternatives, p. 571)

**Attempts at global economic reform could also lead to a world racked by increasing turbulence, a greater sense of insecurity among the major centres of power -- and hence to a further tightening of the structures of domination** and domestic repression – **producing** in their wake **an intensification of** the old **arms race and militarization of regimes, encouraging** regional **conflagrations and setting the stage for eventual** global holocaust.

#### 9. Total rejection of capitalism fragments resistance

Gibson-Graham 96

(JK, feminist economists, End of Capitalism)

One of our goals as Marxists has been to produce a knowledge of capitalism. Yet as “that which is known,” **Capitalism has become the intimate enemy. We have uncloaked the ideologically-clothed, obscure monster, but we have installed a naked and visible monster in its place. In return for our labors of creation, the monster has robbed us of all force**. We hear – and find it easy to believe – that the left is in disarray. Part of what produces the disarray of the left is the vision of what the left is arrayed against. **When capitalism is represented as a unified system coextensive with the nation or even the world, when it is portrayed as crowding out all other economic forms, when it is allowed to define entire societies, it becomes something that can only be defeated and replaced by a mass collective movement** (or by a process of systemic dissolution that such a movement might assist**). The revolutionary task of replacing capitalism now seems outmoded and unrealistic, yet we do not seem to have an alternative conception of class transformation to take its place**. The old political economic “systems” and “structures” that call forth a vision of revolution as systemic replacement still seem to be dominant in the Marxist political imagination. The New World Order is often represented as political fragmentation founded upon economic unification. In this vision the economy appears as the last stronghold of unity and singularity in a world of diversity and plurality. But why can’t the economy be fragmented too? If we theorized it as fragmented in the United States, we could being to see a huge state sector (incorporating a variety of forms of appropriation of surplus labor), a very large sector of self-employed and family-based producers (most noncapitalist), a huge household sector (again, quite various in terms of forms of exploitation, with some households moving towards communal or collective appropriation and others operating in a traditional mode in which one adult appropriates surplus labor from another). None of these things is easy to see. If capitalism takes up the available social space, there’s no room for anything else. **If capitalism cannot coexist, there’s no possibility of anything else. If capitalism functions as a unity, it cannot be partially or locally replaced. My intent is to help create the discursive conception under which socialist or other noncapitalist construction becomes “realistic” present activity rather than a ludicrous or utopian goal. To achieve this I must smash Capitalism and see it in a thousand pieces.** I must make its unity a fantasy, visible as a denial of diversity and change

# 1AR- 2NR DA, Case

### T

#### 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.

### Uranium DA

#### New deposits near the coast of Japan are sufficient to meet all need and extraction feasible

Reuters 11

(Reuter New York Times News, “Huge rare earth deposits found in Pacific: Japan experts,” 7/4/2011, <http://www.reuters.com/article/2011/07/04/us-rareearth-japan-idUSTRE76300320110704>)

Vast deposits of rare earth minerals, crucial in making high-tech electronics products, have been found on the floor of the Pacific Ocean and can be readily extracted, Japanese scientists said on Monday.¶ "The deposits have a heavy concentration of rare earths. Just one square kilometer (0.4 square mile) of deposits will be able to provide one-fifth of the current global annual consumption," said Yasuhiro Kato, an associate professor of earth science at the University of Tokyo.¶ The discovery was made by a team led by Kato and including researchers from the [Japan](http://www.reuters.com/places/japan) Agency for Marine-Earth Science and Technology.¶ They found the minerals in sea mud extracted from depths of 3,500 to 6,000 meters (11,500-20,000 ft) below the ocean surface at 78 locations. One-third of the sites yielded rich contents of rare earths and the metal yttrium, Kato said in a telephone interview.¶ The deposits are in international waters in an area stretching east and west of Hawaii, as well as east of Tahiti in French Polynesia, he said.¶ He estimated rare earths contained in the deposits amounted to 80 to 100 billion metric tons, compared to global reserves currently confirmed by the U.S. Geological Survey of just 110 million tonnes that have been found mainly in [China](http://www.reuters.com/places/china), Russia and other former Soviet countries, and the United States.¶ Details of the discovery were published on Monday in the online version of British journal Nature Geoscience.¶ The level of uranium and thorium -- radioactive ingredients that are usually contained in such deposits that can pose environmental hazards -- was found to be one-fifth of those in deposits on land, Kato said.¶ A chronic shortage of rare earths, vital for making a range of high-technology electronics, magnets and batteries, has encouraged mining projects for them in recent years.¶ China, which accounts for 97 percent of global rare earth supplies, has been tightening trade in the strategic metals, sparking an explosion in prices.¶ Japan, which accounts for a third of global demand, has been stung badly, and has been looking to diversify its supply sources, particularly of heavy rare earths such as dysprosium used in magnets.¶ Kato said the sea mud was especially rich in heavier rare earths such as gadolinium, lutetium, terbium and dysprosium.¶ "These are used to manufacture flat-screen TVs, LED (light-emitting diode) valves, and hybrid cars," he said.¶ Extracting the deposits requires pumping up material from the ocean floor. "Sea mud can be brought up to ships and we can extract rare earths right there using simple acid leaching," he said.¶ "Using diluted acid, the process is fast, and within a few hours we can extract 80-90 percent of rare earths from the mud."¶ The team found that sites close to Hawaii and Tahiti were especially rich in rare earths, he said.¶

#### The plan would assert nuclear leadership first his impact analysis makes no sense on the disad they concedes the ronser and Goldberg ’11 and andres and loudermoulk which is the reasons why leadership is key to stop countries from proliferating checks any impact

#### IAEA would work in early design stages – checks the impact

Campagna 10

[Mark, July, American Nuclear Society, “PHYSICAL SECURITY FOR SMALL MODULAR REACTORS” <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=6&ved=0CEYQFjAF&url=https%3A%2F%2Fsmr.inl.gov%2FDocument.ashx%3Fpath%3DDOCS%252FReading%2BRoom%252FPolicy%2Band%2Bregulation%252FANS%2BSMR%2BPHYSICAL%2BSECURITY%2B910.pdf&ei=pz5ZUJ8xg_jzBMmFgMgP&usg=AFQjCNFYkczfb8249GQAzntiS5tO_AAVPA&cad=rja> ]

Since SMRs are generally in the early stages of development, a significant opportunity exists to affect designs in a way that (1) minimizes the future need for either substantial security forces, excess engineered devices, and/or complex procedural methodologies and (2) allows for the design optimization needed for more effective deployment of new applications. Early-stage design input can compensate in part for later possible design vulnerabilities against intentional acts of sabotage or theft.Therefore, IAEA safeguards and physical security of the SMR must be included in the early design phase in order for the SMR to be an economically feasible solution when built. It is imperative that any SMR design demonstrate proof of requisite high levels of safe survivability from all credible threats, including malevolent terrorism, theft, or aircraft impact. An approach such as the proliferation resistance and physical protection evaluation methodology developed for Generation IV (GEN-IV) nuclear energy systems (Ref. 3) offers an attractive framework for application to SMRs. Stakeholders must understand the risks (i.e., financial and functional); the actual level of threat and required protection must be carefully assessed and understood by the appropriate qualified engineers/designers during very early stages of design/engineering.