



A FORTNIGHTLY NEWSLETTER ON NUCLEAR DEFENCE, ENERGY AND PROLIFERATION FROM
CENTRE FOR AIR POWER STUDIES

Vol 08, No. 21, 01 Sept. 2014

OPINION – Manpreet Sethi

A Strategic Review for India

All major nuclear weapon states periodically issue official statements in the form of a Review or a White Paper to provide a peep into their threat assessments and response priorities. The US Nuclear Posture Review (NPR) is well known. Russia too periodically announces a military doctrine and has used it to signal change in the circumstances of the use of nuclear weapons. Since 1998, China has been bringing out a White Paper on National Defence (WPND) mostly every two years to indicate how it conceptualises its national defence, threat perceptions and security goals, including in the nuclear domain. So do the UK and France.

Most such documents provide general indications on the nation's assessment of its threat environment and the kind of capability that it wishes to build. For instance, the US NPR of 2010 identified nuclear terrorism and proliferation as the topmost threats facing the country. Accordingly, Washington put its focus on global efforts aimed at securing nuclear materials. It also articulated that countries found guilty of sponsoring terrorists could face US military strikes. Since the threat from near nuclear peers was found of a second order, the US downgraded its nuclear readiness posture by removing its nuclear bombers from 24 hour alert and also de-MIRVing its missiles.

Similarly, the Chinese WPND explains the country's threat perceptions and national security

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goals. It provides generic references to the growing advancements in national ability to conduct joint operations with precision, informationised strikes, etc. Over the last three White Papers, China has devoted complete subsections to explaining the role and capabilities of its nuclear force or the Second Artillery Corps (SAC). While the 2008 Paper had called upon the SAC to "build a streamlined and effective strategic force by raising the informationisation of its weaponry and equipment systems, build an agile and efficient operational command and control and increase capabilities of land-based strategic nuclear counter-strikes and precision strikes with conventional missiles," the 2010 Paper stressed modernisation of "capabilities in rapid reaction, penetration, precision strike, damage infliction, protection and survivability." Given that the SAC has the responsibility for both conventional and nuclear missiles, the Paper also reveals how China continues to "improve the conditions of on-base, simulated and networked

training" including in conduct of "trans-regional manoeuvres" and in "complex electromagnetic environments." Such disclosures on posture are meant to buttress deterrence.

Crafted along similar lines, an Indian Strategic Review – ISR (or whatever else it may be called: Strategic Policy Review, or a White Paper) – would be particularly helpful in addressing some of the concerns that have been raised in recent times on the credibility of the Indian nuclear deterrent. Of course, the ISR would traverse a range of security issues. But in the nuclear dimension, besides a reiteration of the basic doctrinal attributes of India's nuclear deterrence, it could highlight some specific issues. Two examples by way of an illustration could be mentioned.

The first could be an articulation of the role of BMD in India's nuclear strategy. Going by the recent technological developments, India seems to be surely and steadily moving towards the development and eventual deployment of some kind of a BMD capability. However, if India is to ensure that this capability does not destabilise nuclear deterrence equations with Pakistan and China, it is imperative that certain clarity be brought to the nature and type of BMD that India plans to have. It is evident that perceiving it as eroding its deterrence, Islamabad has begun investing in cruise missiles and other counter-measures to defeat an Indian BMD. In case India is to escape being pulled into an offence-defence spiral, it is necessary that the

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logic and scope of the Indian BMD is explained as a measure for enhancing survivability of its retaliatory capability (warheads, delivery systems and C2) in view of India's NFU. Given India's missile threat environment, it is virtually impossible to protect its cities unless the BMD is technologically of a very high order and that obviously means expending large amounts of money. But, by explaining the rationale of the BMD for protecting India's counter-strike capability, its destabilising effects can be arrested. And, the ISR could be one means of such communication.

Yet another issue that could do with some clarity is India's response to an act of nuclear terrorism. Given India's experience of Pak-sponsored terrorism, this is a threat that looms large. It would be worthwhile for New Delhi to express its assessment of such a threat and its likely responses. This would showcase resolve that no such act would go unpunished. Doing so through the ISR would enhance deterrence.

Opacity and ambiguity in nuclear numbers and postures has been an attribute of the Indian nuclear strategy. However, an ISR can perform the crucial task of clearing misperceptions through a certain amount of transparency without going into specifics of the arsenal. This is critical given that misperceptions and miscalculations can result in an inadvertent nuclear escalation especially between nuclear neighbours that share border disputes and are prone to border skirmishes.

Such a document would actually be of immense value for two reasons. One, it would aid strategy

formulation and action prioritisation within the country while providing assurance to the domestic public. Simultaneously, it would communicate with the adversary, and its content and tenor could create the atmospherics to help stabilise nuclear equations.

Source: Manpreet Sethi is an ICSSR Senior Fellow affiliated with the Centre for Air Power Studies, <http://www.eurasiareview.com/>, 18 August 2014.

OPINION – Sheel Kant Sharma

Remembering Hiroshima and Nagasaki: Musings on the Bomb

August is the month of remembrance of the ghastly tragedy of Hiroshima and Nagasaki. Such remembrance is far from a mere annual routine of some ritual happenings – there is no dearth of moral, ethical, legal or humanitarian condemnation of those two atomic bombings. Even at the risk of being repetitious, these occasions merit every word uttered, every gesture shown, every action demanded and visions invoked, inspired by the memories of those towns and their people who were eviscerated. The contrived relief of non-repetition of that horror falls flat when the Bulletin of Atomic Scientists displays its doomsday clock close to midnight.

The best and brightest of the last century who took part in that Manhattan Project before 1945 had serious qualms as the days progressed in July 1945 to the Trinity Test at Alamogordo, New Mexico, which would turn the 'gadget' into a 'bomb'. They were, most of them, opposed to its use against Japan; and their revulsion has been detailed in numerous books.

As for India, it is a peculiar coincidence of history that even though it was trapped in the chains of a dominion struggling for independence in 1945, lacking its formal say in the then comity of nations, an ardent scholar in the person of the father of the atomic bomb, Robert Oppenheimer, invoked India's cultural heritage of the millennia past.

Oppenheimer, as is widely known, recited a shloka from the Bhagavad Geeta on seeing the 'gadget' explode in the Trinity test in July 1945: 'brighter than a thousand suns' was the metaphor from the Bhagavad Geeta; and a science historian, Robert Jungk, titled his account of the Manhattan Project with this metaphor. "I am become Death, the destroyer of the worlds" recited Oppenheimer from the Bhagavad Gita.

...This was reflective of the inner torment of the scientist who, nine years later, would pay for his sanity and sincerity in the McCarthy era; when he was humiliated and incarcerated as a security risk. Those times are recalled to point out how uncertain and unfounded the claims were of those who came to justify the bombing of Japanese towns

in the face of revulsion from the great scientists. In fact, as the history of that period shows, practically every danger that is attached to nuclear weapons today, including nuclear terror, was visualised even in that period just after World War II. It has become conventional wisdom to speak about deterrence theories in the context of nuclear weapons. It is taken as almost a given that nuclear weapons deter nuclear weapons

because resorting to their use has not been repeated since 1945. Study and analysis of deterrence doctrines and theories has generally proceeded basically from a rational, game theoretic process, the provenance of which can also be traced to military procurement, deployments, logistics and inventory control during World War II that preceded nuclear bombs, and such provenance is rooted in the technology of that era. On the other hand, the unravelling of the nuclear age has brought to the fore a difficult diversity about approaches, technologies, compulsions and purposes for acquisition and amassing of nuclear weapons. This diversity is not amenable to simplistic norms, understandings or solutions.

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acceptability. However, a reality check tends to show that among various nuclear-armed states, both existing and potential, the underpinnings of nuclear deterrence theories are scarcely universal. They vary according to countries, regions and situations. In fact the march of history in recent decades has catapulted well-worn concepts and theories of deterrence into an expanding universe, as it were, where the seekers find convergence progressively more and more elusive. Theory therefore faces today big challenges and severe limitations in the actual realm of various nuclear deterrents. The spectre of deterrence failure persists and cannot be banished until nuclear weapons are abolished.

Even after acquiring nuclear weapons, for example, a State need not automatically achieve autonomy of decision-making because the security contexts, stakes and inter-play of diverse priorities that are inherent to its international situation and its political economy may differ substantially from what may be applicable to others. On the one hand there is the original war-time motivation and military exigency of developing a weapon – to end all wars – which lay behind the advent of the nuclear age. On the other hand, the subsequent evolution of the pursuits of that deadly weapon by multiple nations lacked that war-time exigency. The more the nuclear age sank into the great divide between East and West, and thence to MAD doctrines of ‘total war’ and extermination of the enemy, the more it moved away from the acute and intense phase of conventional war-fighting (eg in the Pacific after April 1945). The theoretical constructs to justify nuclear weapons after the war delved into conflict planning and management, crisis prevention, escalation control, and gaming consoles, and thus a whole architecture of national nuclear deterrents.

In each of these dimensions closure on complex issues got more and more rooted in the political economy of the States concerned, thereby eluding the tight grasp, say, as was held by the military leaders at the inception of nuclear armament. The

scientists, historians, economists, business, industry, political parties, and a whole spectrum of interest groups inevitably developed direct stakes and came to influence decision-making. This, as records coming out of the former Soviet Union also show, applied even behind the Iron Curtain, albeit with far less transparency. While the Cold War still offered an overarching compulsion to downplay and hide divergences within each block, the end of the Cold War and the fall of the USSR had taken away that overarching and compelling force from the dynamic of deterrence planning, notwithstanding the continuance and expansion of NATO.

Latter day theoretical constructs and inventions such as discriminate deterrence, or the ‘war on terror’, struggled to lend a semblance of totalisation to an inherently uncontainable universe of deterrence discourse and arms competition. Technology has played its role in confusing the picture and offering illusions of breakthroughs via the pursuit of invincibility. But each such illusion has led to more complex and interactive competition and theoretical abstractions. Missile defence is the most prominent example of this complexity, but the push of technology does not stop at missile defence alone and an entire range of futuristic options, such as cyber warfare or hypersonic missiles or global prompt delivery vectors are jostling for the attention of the most advanced economies. However, at a different level of technological advance and in an altogether different setting, this evolution mutates in other forms.

Take the subcontinent. Its main arms competitors a decade ago were approaching nuclear stockpiles of roughly 45-60 according to some estimates. Were they less secure than today when that magic figure may be over 100? In what way has that figure of 100 granted more operational manoeuvrability or control on the use of the oft-parroted strategic assets to further essential national interests or defend them? Regardless of the received wisdom of deterrence theories from

older nuclear weapon States, the inherent features of the political economy of newer weapon States render their weapons in varying shades of purpose or uselessness.

In the case of Pakistan, the politico-military elite may struggle to view its assets in triumphal terms and may, as is widely believed, treat them as a certain guarantee under which it seeks to pursue and promote jihad. This is entirely different from India's case where its domestic challenges of poverty and comprehensive economic development, and of transcending social tensions and exclusion within a democratic polity find no panacea in nuclear weapons – which remain a categorical imperative rooted in the vulnerability flowing from its external security environment. The dialogue between the two remains mired in a hopeless predicament given the elusive grasp of each other's motivations and compulsions. Moreover, this predicament belongs to a universe orthogonal to or detached from the space within which they articulate their deterrent doctrine or posture and justify their build-up.

In human history, wars, weapons and their exigencies came and went over time but nuclear weapons have created powerful illusions of permanent presence and need – the sustenance of which hardly squares up with the political economies of the States involved. Hence, probably, the quest for non-proliferation sometimes mutates into a desperate quest for 'regime change' as part of strategies for non-proliferation. This is also because the idealists and rationalists find no rationale for the pursuit of nuclear weapon capability except as obsessions of particular political groups or regimes. Be that as it may, so long as nuclear arsenals are in the possession of powerful countries, there will always be others who would aspire to possess them – alas!

Source: <http://www.eurasiareview.com/>, 21 August 2014.

OPINION – Ramesh Thakur

Australia Should Take Lead on Global No-First-Use Convention

Compared to the great protest marches of the 1980s, global public opinion on the catastrophic dangers posed by the 16,000-plus nuclear weapons held by nine countries (China, France, India, Israel, North Korea, Pakistan, Russia, the UK and the US) is largely apathetic today. Most people seem to think the dangers disappeared with the end of the Cold War. The belief is dangerously wrong and we risk sleepwalking into

a nuclear disaster and the point to remember about sleepwalking is that those doing it are not aware of it at the time.

As geopolitical tensions rise once again in three different geographical theaters East Asia, Middle East and Eastern Europe their repercussions include risks of reversals on

arms control agreements. Thus the US accuses Russia of violating the old nuclear arms control agreement on intermediate-range nuclear forces (1987) even while a new agreement on reciprocal exchanges by nuclear scientists is mothballed just 11 months after being signed.

The Ukrainian crisis proves the essential uselessness of nuclear weapons. NATO's nukes did not deter Russia from annexing Crimea. Nor were they adequate to reassure Eastern European allies against the perceived rising threat from Russia; only additional deployments of conventional troops achieved that result. That's why abolition remains an irreducible, as well as distant, goal.

Meanwhile, there is still some low-hanging fruit to be plucked on the nuclear arms control agenda. This article shows why a global convention to enshrine a universal NFU policy is one such fruit, and explains why Australia is a credible candidate to lead the push for such a convention. The intent to be the first to use nuclear weapons faces an unresolvable paradox. If the adversary is not nuclear armed, the use of nuclear weapons would

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exact too heavy a moral and political price for the threat to be credible. This explains why Argentina invaded the Falkland Islands in 1982 despite the British nuclear deterrent: It was confident that the UK would not escalate to the use of nuclear weapons.

If the adversary is nuclear-armed and has credible second-strike retaliatory capability, then too a first use posture is not credible as its execution would inflict unacceptable damage on the initiator of nuclear hostilities: a military defeat is always preferable to national annihilation. It would also put the full weight of world moral opprobrium on the side using nuclear weapons first. The only rational strategy is to threaten but not actually use nuclear weapons first. But if carrying out the threat would be national suicide, then the threat cannot be credible. And a noncredible threat cannot deter. Thus what is important is not a first-use policy, but credible second-strike capability. Once that is attained, a NFU policy, backed by an appropriate nuclear force posture and deployment patterns, is a critical step back from nuclear brinkmanship while shifting the onus of nuclear escalation on the adversary.

Furthermore, a NFU policy avoids the need for forward deployment, launch-on-warning postures, and pre-delegation of authority to battlefield commanders, thereby significantly dampening the prospects of accidental and unauthorized use. A NFU policy also counteracts crisis instability as it reduces the pressure on decision-makers to “use or lose” their nuclear arsenal. The temptation to use nuclear weapons preemptively are lessened.

It is simplistic therefore to dismiss NFU as ignored in war time. A universal NFU policy by all nine nuclear-armed states would have considerable practical import with flow-on requirements for

nuclear force posture and deployment — for example, de-alerting (taking weapons off high operational alert status: 2,000 nuclear weapons are presently held in hair-trigger launch-on-warning readiness), de-mating (separating warheads from delivery vehicles and storing them apart in disassembled state) and de-targeting (keeping weapons without aiming them at specific targets). This would promote confidence-building while strengthening the norm of nonuse of nuclear weapons.

Why should Australia take the lead on the issue and not just leave it to the nine nuclear-armed states? To begin with, under the nonproliferation treaty nuclear disarmament is a shared security responsibility of all countries party to the treaty, not just the prerogative of the nuclear powers to be done at their whim and pleasure. Anything that reduces the risks of a nuclear exchange is in the security interests of all countries.

Australia also has a proud tradition of global leadership on niche arms control issues.

Most recently Canberra led the efforts to secure the Arms Trade Treaty and a UNSC resolution on light arms and small weapons. Gareth Evans played a key role in the negotiation of the Chemical Weapons Convention, followed by Alexander Downer’s critical role in shepherding the CTBT through the UN General Assembly when it was stalemated in Geneva. We can make good use of the multilateral UN when we are not busy scapegoating it for our bilateral failures.

Asia is the only continent where numbers of nuclear weapons are actually still rising (in China, India, North Korea and Pakistan), so leadership from within Asia makes sense. A nuclear exchange between India and Pakistan is also considered to be among the most plausible by the specialist community. Australia is among a handful of Asia-

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Pacific countries with the entire supporting infrastructure quality of political and bureaucratic leadership, scientific and technical expertise, credibility in all the relevant constituencies, and financial and human resources to be able to consider launching a sustained initiative on this.

At the same time, China and India are officially committed to a NFU policy and thus there are no adverse implications for Australia's bilateral relations with these key countries. And there are good reasons to believe that Washington also wants to move in this direction but has been held back by the nervousness of some allies in Asia and Europe. All of which puts the reach of low-hanging fruit of a NFU convention within Australia's normative grasp. Japan should strongly support Australia in such an initiative — as the first — and mercifully so far the only country against whom atomic weapons were used. It must join hands to make sure such weapons are not used again. A global NFU convention would be a small but very real step on that long journey.

Source: Professor Thakur is director of the Center for Nuclear Non-Proliferation and Disarmament, Australian National University, <http://www.japantimes.co.jp/>, 18 August 2014.

OPINION – Musa Khan Jalalzai

Nuclear Politics in India and Pakistan

The international community fears that as bigoted elements in the army have close relations with extremist groups like Lashkar-e-Tayyaba, the danger of nuclear terrorism cannot be ruled out in South Asia. The international press continues to report concerns about the growing threat of

nuclear terrorism in South Asia. Pakistan and India are struggling to sign multilateral nuclear agreements with different states in order to

exhibit their challenging military might. Pakistan's nuclear relations with China and India's nuclear relations with the US, Russia and Australia indicate that both the states are preparing for a limited nuclear war in the near future. Pakistan's nuclear doctrine is, in fact, a military strategy that promotes retaliation to nuclear attack by India.

In general understanding, Pakistan's nuclear doctrine means that, in case of an Indian military attack, the government in power would be left with no other option except to retaliate with nuclear weapons. By using nuclear weapons, Pakistan wants to prevent India from disintegrating the country. If Indian armed forces enter Pakistan in large numbers and the Pakistani security forces are unable to intercept their advance towards Islamabad, they may have only the option of using nuclear weapons against India. The Pakistani military establishment understands that, as India dismembered Pakistan in 1971, and continues to challenge the

country by various means, therefore a nuclear bomb is the only umbrella to protect the country from the military might of India. Today, the armies of both states are eyeball-to-eyeball in Kashmir and India continues to become the strongest military power in the region. Therefore Pakistan has concerns about its national security.

In 1974, India tested its nuclear bomb and, in 1998, the country conducted a full-scale nuclear test. The nuclear doctrine of India was perhaps the first of its kind among the known nuclear weapon states of the world. In 2003, India's cabinet

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committee for security affairs reviewed the operationalisation of the nuclear doctrine. The balance of power in South Asia is deeply complicated as India is campaigning to retrieve more nuclear reactors by signing agreements with Australia, the US and European states, and Pakistan has also involved China in this game. India is larger than Pakistan, Bangladesh and other neighbours by a wide margin. There are speculations that PM Narendra Modi might adopt a new nuclear strategy vis-à-vis Pakistan as China continues to help expanding Pakistan's nuclear weapons programme.

In the international press, there is an unending stream of criticism against Pakistan's tactical nuclear weapons. The international community fears that as bigoted elements in the army have close relations with extremist groups like Lashkar-e-Tayyaba, the danger of nuclear terrorism cannot be ruled out in South Asia.

India and Pakistan are nuclear states, each with over 100 nuclear weapons and building more, and have become the worst enemies in the region. When Pakistan decided to deploy tactical nuclear weapons along the Indian border, there was deep criticism of the country's stance on the use of nuclear weapons against India. The deployment of Pakistan's tactical weapons, according to nuclear experts, means to use them against India if it attacks Pakistan's territory in an effort to disintegrate it.

Pakistan's Nasr missile is a ballistic missile launched from a mobile twin-canister launcher. This missile has prompted concern in South Asia. Afghanistan is more anxious about the possible use of this missile against the country as Pakistan continues to fire various kinds of missiles into Afghanistan's Kunar and Nuristan provinces. However, India has also itself given the right to

use nuclear weapons if its territory is attacked by a nuclear state. According to India's nuclear doctrine, nuclear weapons will not be used against a non-nuclear state. Pakistan's tactical nuclear weapons and the Chinese shifting strategy of a new nuclear doctrine created confusion for the

Indian government and called for a re-think of its nuclear position in the region. On August 15, 2014, PM elucidated the position of his government on the national security of India.

During the last 20 years, Islamabad has made remarkable advances in nuclear weapons technology and has successfully countered all of India's offensive mechanisms, targeting its deployments. The military politics of retaliation between the two states prompted a huge cost when India set up the Air Defence Shield or Prithvi series of

missiles, and Pakistan developed MIRVs for its ballistic missiles. As a bigger economy, India can afford these military confrontations but it is a huge burden on Pakistan's national budget. Islamabad is in trouble on the Cold Start Doctrine (CSD) of India that allows the country's military to strike 50 kilometres inside Pakistan's territory at short notice. To counter this threat, Islamabad developed tactical nuclear weapons and threatened that in case of India's attack, it would use them against the country. To exhibit its power, on 05 November 2013, Pakistan fired the Nasr missile capable of carrying a 200 kilogram plutonium warhead, and thus introduced tactical nuclear weapons on land.

As in my previous articles, I have warned that terrorists and extremist groups like the Taliban can use nuclear explosive devices in Pakistan as material for such a bomb is easily available in the country. The Taliban terrorists have targeted Pakistan's nuclear installations time and again while the recent attacks in Karachi and at the air force aviation base in Quetta were similar to the ones that occurred in Wah, Mehran base, Sargodha

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and Kamra, confirmed Southern Command Commander General Nasir Khan Janjua in his statement to journalists. He admitted that 12 terrorists were killed on the spot and 14 soldiers, including civilians, were injured during the fight in Quetta.

The very next day, the army chief visited Quetta and said that the Pakistani nation had rejected terrorism and resolved to overcome it as soon as possible. General Raheel was deeply frustrated during his address to security personnel. His blood pressure was high and it was evident from his face as the PM and his government showed a reluctant response to the attack by not even condemning it open heartedly. General Raheel said his forces would continue to respond promptly to defeat the nefarious designs of the terrorists.

Source: The writer is author of The Crisis of Britain's Surveillance State, <http://www.dailytimes.com.pk/>, 19 August 2014.

OPINION – Philip Iglauer

Nuclear Weapons for South Korea

...Nuclear tensions are again ratcheting up on the Korean Peninsula, with Pyongyang threatening a fourth nuclear weapons test in what one US analyst described as its new “allergic reaction” to routine military exercises by South Korea and US scheduled to start on 18 August 2014.

A fourth nuclear test could further influence the debate in Seoul and Washington over whether South Korea should consider the “nuclear option.” Such a decision – if South Korea were to seriously consider it – could upturn the 60-year South Korean-US alliance, global nonproliferation efforts, not to mention dozens of international obligations that tie one of Asia’s wealthiest nations to the global economy.

Even talk of “going nuclear” has some in South Korea’s political class worrying out loud that the debate has already moved from the political fringe to occupy center stage. And there is cause for concern. The North’s third nuclear test in February 2013 shifted public opinion in South Korea over whether it should start its own nuclear weapons program.

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In September 2013, in a Chosun Ilbo column, conservative commentator and political analyst Kim Dae-jung argued that it should. It is a sentiment echoed by two-thirds of the public surveyed by the Asan Institute for Policy Analysis the same month.

Conservative politician Chung Mong-joon and former lawmaker Song Young-sun, as well as columnists such as Cho Gab-je, Kim Dae-jung and Yi Chun-geun, have long called for South Korea to respond in kind to North Korean nuclear threats with a “South Korea bomb.” They have allies in

American political circles. Elbridge Colby, writing for the conservative foreign policy journal, National Interest, proposed in February 2014 that the US put “geopolitics over nonproliferation” if Japan and South Korea choose to develop nuclear weapons. And last year, the US House Armed Services Committee demanded that the Obama administration examine the “feasibility” of re-deploying tactical nuclear weapons on the Korean Peninsula.

All this talk has pushed one former senior South Korean foreign policy advisor to weigh in on the question of the re-deployment of US tactical nuclear weapons on the Korean Peninsula and the development of a South Korean bomb. Yonsei University professor Moon Chung-in was a former senior foreign policy advisor to South Korean government agencies such as the National Security Council of the Office of the President, the Ministry of Foreign Affairs and Trade, the Ministry of National Defense, and the Ministry of Unification....

Moon, along with Dr. Peter Hayes of the Nautilus Institute, penned an article published this August 2014 by East Asia Foundation's Policy Debates No. 7, answering the question: "Should South Korea Go Nuclear?" Philip Iglauer spoke with Moon recently. The South Korean government has been clear that it has no plan to develop a nuclear weapons program. Why did you decide to come out with this article now? The reason why Peter and I wrote this piece is, our citizens – sometimes 60, sometimes 70 percent of them – continue to support the nuclear weapons idea. We thought that that has something to do with education. If they had a proper non-proliferation education, then they would not come to that kind of conclusion. We thought we need to make a piece that can tell people that having nuclear weapons is more harmful than not having them.

...Far from reinforcing South Korea's already overwhelming conventional military capabilities – including in almost every dimension where North Korea has developed offsetting "asymmetric" capabilities – South Korean nuclear weapons would undermine deterrence based on conventional forces, and even reduce South Korea's ability to use its conventional forces in response to a North Korean attack.

Plus, no US Commander-in-Chief is going to put American forces in harm's way in a Korean conflict, if South Korea wields nuclear weapons outside of US political and military command-and-control. Independent South Korean nuclear weapons would complicate for UN Command and Combined Forces Command. In addition, South Korea's quest for nuclear weapons could instantly trigger a nuclear domino effect in the region. If that happens, there is no way to prevent Japan from going nuclear.

What about the re-deployment of US tactical nuclear weapons in South Korea. Could such US weapons be a viable alternative to a South Korean program? It is not necessary because of US extended deterrence and its subsequent nuclear umbrella. The US has nuclear submarines; they have long-range bombers; they have intercontinental ballistic missiles on the US mainland. They can use them easily. There is no

reason for the US to deploy tactical nuclear weapons here on the peninsula.

As (Lt. Gen. John) Cushman once pointed out in the 1980s, it could be a headache for American forces here. They have to spend a lot of money and human resources to guard against any terrorist infiltration, stealing and all this kind of stuff. That was one of the main reasons why they withdrew the tactical nuclear weapons from Kunsan in 1991.

What is your response to those in the US House of Representatives who have suggested that the redeployment of such missiles could serve to ward off an increasingly aggressive China or re-assertive Russia in the region? That means, what? Those tactical nuclear facilities will simply become a target for Russia and China. Why should we (South Korea) increase our vulnerability through the deployment of those weapons? It is not really feasible from an American policy point of view, too. Obama made it clear that the tactical nuclear weapons card, or theater nuclear weapons, have become obsolete and that he wants to get rid of them as part of his "nuclear weapons free world" campaign.

What is their utility, if the US has intercontinental ballistic missiles, nuclear submarines, and long range bombers? Practically speaking, the US can hit targets anywhere, any time. Why would it deploy tactical nuclear weapons that require an additional cost to guard and protect. Anyway, if that does happen, then it could justify the North Korean having nuclear weapons. We would not have any moral ground. And North Korea would be targeting those tactical nuclear facilities, which would then increase our vulnerability.

What are some of the implications of a South Korean nuclear weapons program on the country's international obligations? South Korea would face very high costs were it to move in this direction, because it is deeply embedded in multilateral and bilateral treaty commitments and nuclear energy supply trading networks. The development of a nuclear weapons program would violate its obligations under the Nuclear Non-Proliferation Treaty and the International Atomic Energy Agency.

It would certainly end South Korea's reactor exports and likely also the supply of uranium, enrichment services, and other materials. It would also end the dual-use technology needed for South Korea's nuclear fuel cycle from the NSG, such as the US, Australia, Russia and France. Washington would likely reject not only Seoul's request to reprocess or pyro-process spent nuclear fuel, but also its desire to enrich uranium, even for research. This would adversely impact our negotiations with Washington in renewing the ROK-US Atomic Energy Cooperation Agreement.

Some conservatives in South Korea have suggested South Korea could use serious consideration of such a program as leverage in current negotiations with the US over renewing the ROK-US Atomic Energy Cooperation Agreement. I think it is a stupid strategy. They think they can use this as a bargaining chip, but they do not understand the overall sentiment in Washington, D.C. with regard to nonproliferation.

The only way President Park Geun-hye could persuade Washington is this: "Even if we go through reprocessing of spent fuel or uranium enrichment, there is no way for us to go further toward nuclear weapons. The whole episode in the 1970s by Park Chung-hee is a thing of the past. Don't worry about it. There is not even a single iota of a possibility that we will do something like that."

Moreover, the conservatives approach would severely undercut President Park's position. It would have the opposite effect in Washington. That is what Robert Einhorn has been arguing. Compromising nonproliferation is tantamount to opening a Pandora's Box, regardless of whether (South Korean negotiators) are talking to Democrats or Republicans. If the nuclear genie is let out of the bottle, then it would critically

undermine US hegemony in this part of the world. No matter how worrisome China's rise or the posture of Moscow in the Russian Far East.

Source: <http://thediplomat.com/>, 14 August 2014.

OPINION – Will Hobart

Is Nuclear Arms Control Dead?

Amid the wider sense of a global crisis in security, from Iraq to Ukraine to the South China Sea, there is a deeper long-term threat: the risk to nuclear arms control. In this worsening climate of great-power tension and mistrust, the nuclear arms-control regime long in place between the US and Russia is in danger. And without it, efforts to stop

the spread of nuclear weapons, or at least limit their role in international affairs, are also in trouble. For instance, the prospect of heading off a destabilizing nuclear-arms competition in Asia, including between China and the US, will further recede, as will the appeal of the US-Russian precedent of restraint for India and Pakistan. America and Russia remain overwhelmingly the world's strongest nuclear-armed powers, and their example is crucial for the future of nonproliferation, disarmament and the global nuclear peace.

A key mechanism here is the historic 1987 INF treaty, under which Moscow and Washington banned the deployment of a whole

destabilizing class of nuclear-armed missiles. Despite signs that Russia had violated this agreement as far back as 2010, and concerns voiced by Putin in 2007 that China also ought to be included, only now have things come to a head. US president Barack Obama recently took the extraordinary step of sending a letter to Vladimir Putin, levelling the accusation that Russia is in breach of its solemn treaty commitments by

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testing cruise missiles with a range between 500 and 5,500km since 2008.

Given the high state of current tensions, including fears of a Russian invasion of eastern Ukraine and international outrage over the shooting down of passenger flight MH17, it is difficult to imagine Russia and the US now putting aside their differences to prioritize a reinvigoration of nuclear arms control.

But recent events aren't the only threat to strategic arms control between the US and Russia—for two reasons. First, existing treaties such as New START (2010) and the INF don't address modern and nascent nuclear capabilities present in the US-Russian relationship, such as sea-launched cruise missiles. And second, politically and strategically, there seems to be no great momentum, nor will in either camp to move forward on nuclear risk mitigation as there was during the abortive "reset" of Obama's first presidential term. President Obama's great hopes for a world without nuclear weapons, proclaimed in Prague in 2009, are more than ever confronted by ugly geopolitical realities.

Of course, the obvious benefit of nuclear arms control is that it reduces the numbers of these devastating weapons deployed for potential use. But equally important is the less-measurable benefit produced by a system of inspections, building confidence and providing strategic warning. Thus under New START, numbers of non-deployed weapons were proverbial low-hanging fruit traded in return for access and verification. In turn, Washington and Moscow established a practical, normative mechanism for crisis stability.

Nuclear weapons may quietly cast a long shadow over the current Ukraine crisis—their very existence must be considered a major restraint on a Western military response, and perhaps as a reminder of that, Russia has conducted drills simulating a NATO nuclear strike. Whatever else he fears, Putin is presumably concerned that were Ukraine to join NATO, it would become part of a nuclear-armed alliance able to deter Russia and, in theory, strike first in a crisis. It can also be argued that Russia's renewed interest in previously-banned, intermediate-range missiles is partly a product of Russian concern about NATO capabilities, such as ballistic-

missile defences, submarine-launched cruise missiles and progress on technology, such as hypersonic glide vehicles required to achieve the objectives of what is known as Prompt Global Strike. Russia's argument, right or wrong, is that these undermine the deterrence stability established during the close of the Cold War.

For its part, Washington has not gone into depth about what is wrong with Russia's violation of the treaty other than it puts European allies at risk and that it hopes it can negotiate a return to "compliance." The US sees its own actions as being in line with the stabilizing and reassuring objective of having a wide range of non-nuclear options for its treaty commitments in Europe and its capability to deter without

having to resort to nuclear threats.

So even if the US and Russia were somehow to bring their present geopolitical crisis under control and renew their focus on nuclear-arms limitations, they would find new barriers to cooperation, thanks to changing technology. Things may not

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have come to a head so soon if not for Putin's coercion towards Ukraine, but sooner or later New START and the INF would have been endangered by the emergence of new weapons capabilities not covered in either treaty.

If the arms-control mechanisms between the US and Russia collapse, then the world loses its ability—and crucially, the example—to properly interpret and recognize nuclear intentions. We, therefore, need new causes for their reinvigoration, and preferably not borne out of nuclear crisis. New technologies need to be recognized as potentially destabilizing in their nascent stages of operation, even if in decades to come they form additional or modernized legs to the long-accepted nuclear 'triad' (aircraft, land-based missiles and submarine-launched ballistic missiles) and thus contribute to new forms of deterrence stability. Until then, we face the prospect of losing access and channels of communication in times of crisis, leaving decision makers to rely on guesswork, crystal-ball gazing and espionage: not unlike the worst phases of the Cold War.

Ultimately, the real danger may not be that the current arms-control treaties between Washington and the Kremlin might break down, but that whatever (if anything) replaces them won't maintain the kind of channels of access and communication that have kept the past quarter-century of US-Russian strategic relations stable. Already, this seems to be the trend, as a plan to allow nuclear scientists from the US and Russia to access each other's nuclear sites has been put on ice as of March 2014 directly related to the crisis in Ukraine.

The Ukraine crisis is ushering in a historic low in relations between Russia and the West, and damaging, perhaps even threatening to unravel, some of the greatest achievements of nuclear

arms control. Elsewhere in a troubled world, a second nuclear age is underway as China modernizes its arsenal, North Korea continues to develop its provocative capabilities and Indian and Pakistani nuclear programs continue apace. Whatever else their burdens, the US and Russia hold a special responsibility for leadership as the original and largest nuclear powers. If they fail in that, the repercussions will be felt by the rest of the world long into the future.

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Source: Will Hobart is a research associate on nuclear issues with the Lowy Institute. <http://nationalinterest.org/>, 19 August 2014.

NUCLEAR STRATEGY

CHINA

China Reveals 12,000-Km Long Range ICBM

China's next generation of ICBM, which have a range of 12,000 kms, have been revealed. A piece of information revealed in a government environmental monitoring file has indirectly confirmed the existence of a new generation of Chinese ICBM, the DF-41 missile, a report on the website of state-run Global Times said.

Tang Bohu, a military commentator with Ifeng News, told the Daily that the confirmation of the existence of DF-41 missiles will give the international community,

including the US, a new understanding of China's nuclear power... Song Zhongping, a Beijing-based military affairs commentator, said it is no surprise that China is researching the next generation of ICBMs.

...According to Jane's Defense Weekly, the DF-41 missiles are designed to have a range of 12,000 kilometres, putting it among the world's longest-range missiles...The next generation should be

DF-41 missiles are designed to have a range of 12,000 kilometres, putting it among the world's longest-range missiles...The next generation should be able to carry both nuclear and regular warheads that can perform accurate attacks.

able to carry both nuclear and regular warheads that can perform accurate attacks." Tang said it is widely speculated that the DF-41 missiles will be able to carry three nuclear warheads.

...Song said China's development of the new missiles is aimed at maintaining military balance to protect national security, not to seek hegemony, while the US is trying to break it by being ambitious in improving military technologies in both defence and attack. China has

a "no first use" policy for nuclear weapons. "The US has been building its missile defence network like a shield, which other countries' missiles cannot penetrate. This for sure stimulated other countries to sharpen their 'spears'. "Otherwise, if the US has both the strongest shield and spear, they could impose an aggressive strategy on us, and we would be driven into passivity," Song said.

Source: <http://www.hindustantimes.com/>, 02 August 2014.

RUSSIA

Bulava Missile to Be Launched In Autumn

The intercontinental submarine-launched ballistic missile Bulava will be launched in September or October 2014, a source in the Russian naval headquarters familiar with the process said... The missile will be launched from Borei-class strategic missile submarines Alexander Nevsky and Vladimir Monomakh, the source told ITAR-TASS.

Vladimir Monomakh was initially planned to shoot Bulava in August 2014 or September 2014, the lead vessel Yuriy Dolgorukiy – in November 2014, while Alexander Nevsky was not planned to participate this year. Alexander Nevsky is the first serial Borei-class submarine and began service in 2013. Vladimir Monomakh is planned to join the fleet in late 2014. Alexander Nevsky and Vladimir Monomakh were earlier reported to make three test Bulava launches from the Sea of Okhotsk in the summer or autumn of 2015. For this, the submarines would follow the Northern

Sea Route with 16 missiles each, said a source in the governmental military-industrial commission.

Bulava R-30 is the Russian state-of-the-art three-stage solid-fuel missile that carries up to 10 independent warheads and has a range of 8,000 kilometers (5,000 miles). The missile aimed to equip two strategic submarines Shark and Borei has been developed since 1998.

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The rocket left the launch container but a malfunction occurred in the second minute of flight. According to the governmental commission, the failure resulted from a mistake in nozzle material production. Bulava launches would be resumed in the autumn of 2014, Borisov said later.

Source: <http://en.itar-tass.com/>, 13 August 2014.

NUCLEAR ENERGY

BRIC

Research and Markets: Nuclear Power in BRIC Countries 2014-2018

Research and Markets has announced the addition of the "Nuclear Power in BRIC Countries 2014-2018" report to their offering. The analysts forecast the Nuclear Power in BRIC Countries market will grow at a CAGR of 13.6 percent to reach 90.7 GW by 2018. According to the report, rise in demand for power is the prime reason behind the growth of the Nuclear Power market in BRIC countries. Population growth along with industrial development is amplifying the power consumption. Power demand from the Residential sector has also increased with respect to a surge in use of consumer electronics such as LED TVs, iPods, air conditioners, and mobile phones.

Further, the report states that public opposition and safety issues are significant barriers for the growth of the Nuclear Power market. Destructive nuclear accidents such as Chernobyl and

Fukushima had a negative impact on the minds of the public about nuclear energy. It has raised the fundamental question about the safety of operational nuclear reactors worldwide. Many nuclear power plant plans were canceled in China because of the public safety concerns.

Nuclear power in BRIC countries is expected to experience moderate growth during the period 2014-2018. The cumulative installed capacity for nuclear power in BRIC countries was 47.8 GW in 2013, Russia being the leading country among BRIC nations, with cumulative installed capacity of 25.2 GW. China is expected to have the maximum capacity additions in the forecast period and will be the leading nation in terms of cumulative installed capacity. Rising power demand is the prime reason behind growth of the nuclear power in BRIC countries....

Source: <http://www.heraldonline.com/>, 20 August 2014.

CHINA

China Adds Most Nuclear For Year with 3.2gw

This year has seen China make a significant impact on the world's nuclear power industry, having brought three new reactors online with a total capacity of 3.2 GW, according to an analyst with research and consulting firm GlobalData. Sneha Elias, GlobalData's analyst covering power, states that alongside new reactors Yangjiang 1, Hongyanhe 2 and Ningde 2, China has also announced a substantial investment in two new units at the Haiyang facility.

The analyst says: "On 27 February 2014, the Chinese government agreed to invest \$US5.1 billion in the

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construction and development of two nuclear power units at the Haiyang nuclear facility in Yantai, Shandong Province. "The total installed capacity of the two units is 2.2 GW, comprising two AP1000 nuclear reactors designed and supplied by US-based company Westinghouse. The investment per megawatt will be \$US2.32 million."

Additionally, the China National Nuclear Corporation and one of its subsidiaries, China Nuclear Engineering, is listing shares on the Shanghai Stock Exchange, for gross proceeds of \$US2.64 billion and \$US0.29 billion, respectively... "China National Nuclear Corporation intends to issue up to 3.651 billion shares, or 25 per cent of its enlarged capital, at a price of CNY4.46 (\$US0.72) per share, for gross proceeds of up to CNY16.3 billion (\$US2.64 billion) in an initial public offering.

"The company intends to use these proceeds to finance its four nuclear power projects in Fujian, Zhejiang, Hainan and Jiangsu province and for general working capital purposes." China currently has 20 active nuclear reactors, with a

further 28 under construction. Another 10 reactors are expected to begin commercial operation between 2017 and 2025, with a total capacity of 9.56 GW....

Source: <http://www.businessspectator.com.au/>, 21 August 2014.

Reactor Internals Installed at Sanmen AP1000

At Sanmen 1 the first components of the reactor itself have been put into position after a year of preparation. On 18 August 2014 Chinese engineers lifted

Chinese government agreed to invest \$US5.1 billion in the construction and development of two nuclear power units at the Haiyang nuclear facility in Yantai, Shandong Province. "The total installed capacity of the two units is 2.2 GW, comprising two AP1000 nuclear reactors designed and supplied by US-based company Westinghouse. The investment per megawatt will be \$US2.32 million.

the upper and lower sections of the new AP1000

reactor internals into position. These steel structures sit within the reactor pressure vessel and will support the fuel assemblies and control rods.

Sanmen 1 in Zhejiang province is the first AP1000 unit to be built and there is "no direct experience to draw on," noted China Nuclear Engineering and Construction Corporation. A year of meticulous planning was required to ensure successful installation the company said. The reactor has been under construction since March 2009. ...Three further AP1000s are at earlier stages of construction in China: another at Sanmen, and two more at Haiyang in Shandong province. Four reactors of the same design are currently being built in the USA - two each at Vogtle and Summer - while three AP1000s are also proposed for the Moorside site in the UK.

Source: <http://www.world-nuclear-news.org/>, 20 August 2014.

Tianwan 3 Vessel Passes Pressure Tests

The VVER-1000 reactor vessel for the third unit of the Tianwan nuclear power plant in China's Jiangsu province has successfully completed hydraulic tests at the manufacturing plant in Russia. Made by OMZ subsidiary Izhorskiye Zavody, the pressure vessel was placed on a test stand and subjected to internal pressure of 24.5 MPa to prove the durability of the metal as well as its welded joints. The tests were supervised by a commission which included representatives from OKB Hidropress, VO Safety, Atomproekt, Izhorskiye Zavody, as well as from the customer, Jiangsu Nuclear Power Corporation (JNPC). JNPC is a joint venture between China National Nuclear Corporation (50%), China Power Investment Corporation (30%) and Jiangsu Guoxin Group (20%).

Construction is currently under way on Tianwan 3 and 4 - known as Tianwan Phase II - with the two Russian-designed VVER-1000 pressurized water reactors scheduled to enter service in 2017 and 2018. They will join the two VVER-1000s making up Phase I of the power plant, which have been in operation since 2007.

Having successfully completed the pressure test, the next step for OMZ is the trial assembly of the reactor internals and the vessel head. The company said that this is "one of the final stages in the manufacturing process of the reactor vessel prior to shipment to the customer."... Construction is currently under way on Tianwan 3 and 4 - known as Tianwan Phase II - with the two Russian-designed VVER-1000 pressurized water reactors

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Source: <http://www.world-nuclear-news.org/>, 20 August 2014.

INDONESIA

IAEA Supports Indonesia's Plan for Reactor

The IAEA, supports Indonesia's plan to develop an experimental power reactor, or RED, as part of implementing nuclear technology in the country. "The IAEA will be a watchdog that will monitor the utilization of nuclear energy in the context of improving life quality and welfare [in Indonesia]," IAEA's deputy director general Alexander Bychkov said in a meeting with Research and Technology Minister Muhammad Hatta in Jakarta.... They were accompanied by Djarot Sulistio Wisnubroto, head of the National Nuclear Energy Agency (Batan).

Djarot said the RED aims to show people that nuclear power plants (PLTN) can be used to produce electricity that even small islands can benefit.

Bychkov said the IAEA would exchange information, experience, knowledge and offer advice on nuclear technology when RED was built. Djarot said the RED aims to show people that nuclear power plants (PLTN) can be used to produce electricity that even small islands can benefit. "The idea to construct RED came up last

year.... A political decision from Indonesia's president-elect is needed," Djarot said.

Both Bapeten and IAEA will cooperate in supervising safety and nuclear security to ensure that the nuclear site will not be misused, Nuclear Energy Regulatory Agency (Bapeten) deputy chairman Khoirul Huda said... According to the plan, RED will be built in Serpong, South Tangerang, and its construction can be completed in three to four years at a budget of up to Rp 1.6 trillion (\$137 million). If approved, Djarot predicted that the nuclear site will be completed in 2019....

Source: <http://www.thejakartaglobe.com/>, 22 August 2014.

ROMANIA

Romania Plans Cernavoda JV

Nuclearelectrica is looking for a private investor to take a majority stake in the joint venture it plans to create to manage the expansion of the Cernavoda nuclear power plant.

The state-run Romanian nuclear power producer said on 8 August 2014 that it will provide 49% - or not more than €2 million (\$2.7 million) - of the investment necessary to start up the new company, which will become an independent electricity producer within two years of its formation.

The investor will need to ensure that the project to add two reactors to the Cernavoda plant uses Candu 6 technology and to guarantee it meets national and European Union nuclear safety requirements, Nuclearelectrica said. Romania plans to add units 3 and 4 to cover a deficit in electricity generating capacity expected after 2020, it added. ...Cernavoda is home to two operating Candu 6 pressurized heavy water reactors supplied by Atomic Energy of Canada Ltd (AECL) and built by a Canadian-Italian consortium of AECL and Ansaldo. Unit 1 started up in 1996,

but work was suspended on a further four units in 1991. Unit 2 was subsequently completed and has been in operation since 2007.

Efforts to resume work on Cernavoda 3 began in 2002, and a new project company, EnergoNuclear, was established in 2009 to oversee the completion of units 3 and 4. Initial partners GDF Suez, CEZ, RWE Power and Iberdrola subsequently withdrew, and the company is currently 84.65% owned by Nuclearelectrica. The Romanian state has since then been looking for new investors in the project to enable Nuclearelectrica to reduce its share.

Source: <http://www.world-nuclear-news.org/>, 12 August 2014.

RUSSIA

Russian Regulator to Supervise New NIIAR Facility

Rostekhnadzor, the Russian regulator, has established an integrated working group to supervise construction of a multi-functional radiochemical research centre at the Research Institute of Atomic Reactors (NIIAR) in Dimitrovgrad. The centre will carry out research and development work on technologies for the closed nuclear fuel cycle of fast neutron reactors.

...NIIAR plans to build the centre by 2017 as part of the revised federal target program for 2010-2015 and until 2020. Founded in 1956 to host both research and experimental reactors, NIIAR is said to be the biggest nuclear research centre in Russia. It researches fuel cycle, radiochemicals and radioactive waste management, as well as producing radionuclides for medicine and industry. It hosts the main R&D on electrometallurgical pyroprocessing, especially for fast reactors, and associated vibropacked fuel technology for these.

Source: <http://www.world-nuclear-news.org/>, 13 August 2014.

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NUCLEAR COOPERATION

RUSSIA-CHINA

Russia May Help Build Two Nuclear Plants Near Harbin

...Rosatom State Nuclear Corp of Russia is studying the feasibility of building two nuclear plants in Harbin in northeastern China, as part of efforts to circumvent the effects of Western economic sanctions, according to the website of China's Ministry of Commerce on 11 August 2014.

The Russian firm may partner with China Huaneng Group for the project. In June 2010, Huaneng Heilongjiang Power Corp signed agreements for nuclear power plants with the municipal governments of Hailin city, Fngzheng county and Tonghe county, all in the northeastern province of Heilongjiang and the latter two under the jurisdiction of the provincial capital Harbin. The projects are located in regions drained by the Songhua and Mudan rivers. The projects were shelved however following the meltdown of the Fukushima Daiichi power plant in Japan in March 2011.

...The first generating unit of Hongyanhe nuclear power plant in Liaoning province has been running at only a portion of its capacity since its inauguration in June 2013 and the situation has become even worse after the second reactor on 13 March 2014. The third reactor is scheduled to come online in September next year and construction work on Xudabao nuclear power plant in Liaoning may start by the end this year. Moreover, thermal power facilities with total capacity of 23.5 million kilowatts are expected to be built in northeastern China during the 13th five-year national development period from 2016-2020.

Source: <http://www.wantchinatimes.com/>, 21 August 2014.

Russia & China Launch Era of Floating Nuclear Power Plants

Russia began a campaign in 2000 to construct seven floating nuclear power plants, but Moscow only built one due to strong Western environmental opposition and Russia's weak economy. But now that Russia is under Western financial sanctions and China recently admitted

its huge domestic effort to frack for natural gas has failed, the two nations are teaming up to launch a new era of floating nuclear power plants.

Russia's nuclear leader Rosatom Corporation completed the Akademik Lomonosov in July 2010 at a cost of \$232 million, and it is set to be deployed as the world's first floating nuclear power plant in Russia's eastern Siberian city of Vilyuchinsk. The vessel contains a pair of KLT-

40 marine nuclear reactors that together would generate 70 megawatts (MW) of electricity or 300 MW of heat, enough to provide electricity to a city of 200,000 people. The floating nuclear power plants were designed to be mass produced for under \$200 million in shipyards and then towed to coastal waters near a city or an industrial complex.

Russia's design is a 474 ft. by 98 ft. barge that is 33 ft. high and has an underwater draught of 18 ft. The total weight of the barge would be 47.4 million pounds, and it would have an operating crew of 69 people. The nuclear reactor will only need to be refueled every three years and will save 225,000 metric tons of coal and 110,000 tons of fuel oil each year. The vessel's lifespan is expected to be 40 years.

The world's first floating nuclear power station was MH-1A. The reactor was built for the US Army by Martin Marietta under a \$17,200,000 contract in August 1961 and was laid in the hull of a World War II Liberty Ship named the Sturgis. MH-1A was

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towed to the US -controlled Panama Canal Zone and provided 10 MW of reliable nuclear power for several years....

The potential benefits of floating nuclear power stations, according to a recent symposium hosted by the American Society of Mechanical Engineers and a group from the MIT, is that off-shore reactors would be safe from earthquakes and tsunamis and would solve the need to site power plants away from populated areas. Floating reactors would have plenty of water to generate turbine steam and the ocean would serve as an "infinite heat sink" to passively cool the reactor core, instead of "relying on pumps driven by electricity, which could fail," such as in the Fukushima nuclear disaster in Japan in 2011.

China became the largest global energy consumer in 2010 and passed the US as the largest net oil importer in early 2014. Addicted to burning highly polluting coal for 70% of its energy needs and 80% of its electricity, China now burns 47% of the world's coal and has 16 of the world's 20 most polluted cities.

...With Russia under financial sanctions and China now desperate to gain domestic energy, neither country cares how much Western nations and environmentalist organization scream about the risk of off-shore nuke plants. Rosatom is already building four nuclear reactors at China's Tianwan power station with a combined capacity of 1060 MW. There are currently 29 nuclear power plants under construction in China, and the country has plans to build 200 more. The six Chinese offshore floating reactors Rosatom will build will only add 450 MW. But launching the first commercial floating nuclear power stations is just the beginning of a new era.

Source: *Chriss W. Street*, <http://www.breitbart.com/>, 19 August 2014.

Russia to Study Nuclear Proposal in NE China

A Russian nuclear energy group is researching a project proposed by China to build two nuclear power facilities in Harbin, northeastern Heilongjiang province, according to a statement by China's Ministry of Commerce. Russia's State Atomic Energy Corporation (Rosatom) is to send experts to investigate, said the company's director for capital investments, Gennady Sakharov.

...Russian news website Rusfact.ru said China has the world's second largest nuclear energy demand after the US, and China has no nuclear power plants in inland areas....

Russia and China signed a joint statement declaring a new strategic partnership, with cooperation in atomic energy development and use being the priority, during the Conference on Interaction and Confidence Building Measures in Asia

(CICA) summit in Shanghai in May 2014. Rosatom and the China Atomic Energy Agency signed a memorandum of cooperation on matters relating to the construction of nuclear power stations after the conference.

Source:<http://www.chinadailyasia.com/>, 12 August 2014.

US-INDIA

DAE Team to Visit US to Explore Funding Options for Projects

Ahead of PM Narendra Modi's visit next month 2014, a team of officials from the DAE will travel to the US to explore funding options from Exim Bank for a nuclear power plant in Mithi Virdhi in Gujarat, which is to be built by American firm Westinghouse. Westinghouse is to build 6 reactors of 1000 MW each in Chhaya Mithi Virdhi. It is one of the two projects to come up in India after the signing of the Indo-US Civil Nuclear Deal—the other one being at Kovvada in Andhra Pradesh of equal size to be built by another US company General Electrical.

Westinghouse is to build 6 reactors of 1000 MW each in Chhaya Mithi Virdhi. It is one of the two projects to come up in India after the signing of the Indo-US Civil Nuclear Deal—the other one being at Kovvada in Andhra Pradesh of equal size to be built by another US company General Electrical.

...Since Westinghouse is an American company, the nuclear plant which is to come up in Gujarat with US cooperation is eligible for loan from the EXIM Bank of the US...The Modi government has ratified the Additional Protocol of the IAEA, mandatory under the Indo-US civil nuclear cooperation which will put the civilian nuclear facilities under international inspection and scrutiny. This was also a signal that his government was committed to the promises made under the deal by the previous UPA government. However, the cost of the project still remains unclear as financial negotiations are still in the preliminary stages. The sources said the initial price quoted by Westinghouse was around Rs 14 per unit, something which India finds very expensive and wants that the rate be brought down drastically.

Source:<http://articles.economictimes.indiatimes.com/>, 17 August 2014.

NUCLEAR PROLIFERATION

IRAN

Iran's Missiles Not Negotiable

Iran's Defense Minister Brigadier General Hossein Dehqan reiterated that any information about the country's missile industry and scientists are highly confidential and would never become a topic of talks between Tehran and the world powers. The missile issue has not been raised in the negotiations and Iran's missile power will never be an issue for negotiations with anyone," Dehqan told reporters in a press conference in Tehran on Saturday. Asked if Tehran has permitted the IAEA to visit its military site in Parchin, near Tehran, he said, "The Agency has visited Parchin several times and taken samples; therefore, this is not an issue for discussions now."

Dehqan stressed that Iran would never provide anyone with "information about its defense scientists", and added, "This issue is not acceptable to us." Asked if the UN nuclear watchdog has raised new questions on Iran's use of Exploding Bridge Wire (EBW) detonators, he

said, "The Agency hasn't raised new questions and they were the same old questions which had already been answered and no new ambiguities were raised." He added that Iran has presented detailed response to the IAEA's questions about EBW detonators during the recent visit to Tehran by IAEA chief Yukiya Amano.

The US officials have stated several times that they intend to include Iran's ballistic missile technology in the nuclear talks, while Tehran has repeatedly stressed that it would not allow inclusion of any other topic in the negotiations but those related to its nuclear program.... "It will be wrong to assume that the only application of Iran's defensive missiles that have not and will not be the subject of any negotiations is carrying unconventional weapons," Zarif said in a joint press conference with his Austrian counterpart Sebastian Kurz in Tehran earlier this year and in response to a question by an Austrian reporter who asked if Iran did not have a nuclear weapons program then why it produced ballistic missiles which have Europe within their range.

... "Iran's nuclear program will always remain peaceful and in this case no one can claim that Iran's missiles will carry nuclear weapons, because Iran does not produce nuclear weapons to be carried by missiles or any other delivery system," the Iranian foreign minister said....

Source: <http://english.farsnews.com/>, 23 August 2014.

NUCLEAR NON-PROLIFERATION

GENERAL

Neutrino Detectors Could Help Detect Nuclear Weapons

...Scientists now believe neutrinos could be used to monitor nuclear power plants for signs of nuclear proliferation.... A group of scientists led by a physics professor with the College of Science at Virginia Tech are asking whether the neutrino could provide the world with clues about nuclear proliferation in Iran and other political hotspots.

Neutrinos are produced by the decay of radioactive elements, and nuclear reactors produce large amounts of neutrinos that cannot be shielded or disguised, which could help regulatory agencies monitor plutonium production. Measuring neutrino emissions allows scientists to infer the plutonium content of a reactor from outside the building, according to a letter in Physical Review Letters written by Patrick Huber, an associate professor of physics and a member of the Center for Neutrino Physics at Virginia Tech, with Thomas Shea, a 20-year veteran of the IAEA, and graduate students Eric Christensen of Westminster, Maryland, a doctoral student in physics, and Patrick Jaffke of Arlington, Virginia, a doctoral student in physics and a master's student in nuclear engineering.

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"By making moderate improvements in existing neutrino-detector technology, we can fit a detector system into a standard 20-foot shipping container to monitor the Iranian heavy water reactor at Arak as part of a non-proliferation measure," Huber said. "Neutrino monitoring is non-intrusive and doesn't rely on a continuous history of reactor operations." Monitoring antineutrinos – subatomic particles akin to the neutrino, except they spin in a different direction – also could help distinguish varying levels of fuel enrichment.

Park suggested that the following countries — South Korea, Japan and China — lead in the establishment of the nuclear safety body based on Euratom which guarantees the safety and proper allocation of its energy supply.

The Iranian 40 megawatt heavy water reactor at Arak has a design which is ideal for plutonium production for nuclear weapons and the IAEA needs to be able to verify whether operations at the facility are for peaceful purposes. Antineutrino detectors can provide the agency with high-level monitoring not currently offered by any other

technique, the researchers say. This monitoring is based on the spectrum of antineutrinos produced by fission of uranium-235, plutonium-239, uranium-238, and plutonium-241, where the plutonium isotopes produce neutrinos with a lower average energy. The paper is the result of an interdisciplinary collaboration between Huber's group at Virginia Tech's College of Science and Shea, with funding from the US Department of Energy and the Institute for Society, Culture, and Environment at Virginia

Tech...
Source: <http://www.sciencedaily.com/>, 12 August 2014.

NUCLEAR SAFETY

SOUTH KOREA & NORTH EAST ASIA

South Korea Proposes Northeast Asia Nuclear Safety Group

In her Independence Day speech, Park mentioned that Northeast Asia is beginning to amass its number of nuclear power plants and this is starting to create safety concerns among the people of the region. Park suggested that the following countries — South Korea, Japan and China — lead in the establishment of the nuclear safety body based on Euratom which guarantees the safety and proper allocation of its energy supply.

...At present, 23 of South Korea's nuclear reactors supply a third of the country's energy reserve. Meanwhile, China is constructing 29 nuclear reactors in addition to the 20 they are currently operating. Japan, on the other hand, has 48 nuclear reactors, but all are non-

operational due to the 2011 Fukushima disaster. Since 2012, South Korea has encountered several nuclear crisis that led to the shutdown of some of the country's nuclear reactors to change its parts. The incident caused Seoul to be compelled to stop relying on nuclear energy and to discard the fuel rods stored at the nuclear plants. The nuclear safety group could also respond to relief operations, drug-related issues, and disasters related to climate change, Park said. She added that the joint effort would build the foundation for lasting peace.

Source: <http://www.chinatopix.com/> 18 August 2014.

UK

4 Nuclear Reactors Shut Down in UK over Safety Concerns

France's state-owned utility EDF has shut down four nuclear reactors at two power plants in northern England, citing safety precautions. Two reactors at each of the Heysham and Hartlepool nuclear plants have been shut down for at least eight weeks, EDF Energy, the British unit of French giant EDF, confirmed.... Experts located a defect at one of the four reactors, prompting a shut down since June 2014.... Meanwhile, Britain announced last year a £16-billion deal with EDF to build two reactors at Hinkley Point C, southwestern England. According to reports, EDF's partner China General Nuclear Power Group (CGNPG), possibly together with China National Nuclear Corporation (CNNC), is also expected to have stakes in the consortium.

Source: <http://www.presstv.ir/>, 12 August 2014.

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NUCLEAR WASTE MANAGEMENT

USA

55-gallon drum of nuclear waste, buried in a salt shaft 2,150 feet under the New Mexico desert, violently erupted late on 14 February 2014 and spewed mounds of radioactive white foam. The flowing mass, looking like whipped cream but laced with plutonium, went airborne, traveled up a ventilation duct to the surface and delivered low-level radiation doses to 21 workers.

The accident contaminated the nation's only dump for nuclear weapons waste – previously a focus of pride for the Energy Department – and gave the nation's elite ranks of nuclear chemists a mystery they still cannot unravel. Six months after the accident, the exact chemical reaction that caused the drum to burst is still not understood. Indeed, the Energy Department has been unable to precisely identify the chemical composition of the waste in the drum, a serious error in a handling process that requires careful documentation and approval of every substance packaged for a nuclear dump.

Waste Isolation Pilot Project:

...The job of identifying the waste that is treated and prepared for burial will grow even more difficult in the years ahead when the Energy Department hopes to treat even more highly radioactive

wastes now stored at nuclear processing sites across the country and transform them into glass that will be buried at future high-level dumps.

The accident at the facility near Carlsbad, N.M., known as the Waste Isolation Pilot Plant, or WIPP, is likely to cause at least an 18-month shutdown and possibly a closure that could last several years. Waste shipments have already backed up

at nuclear cleanup projects across the country, which even before the accident were years behind schedule....

...Preliminary Energy Department investigation found more than 30 safety lapses at the plant, including technical shortcomings and failures in the overall approach to safety. Only nine days before the radiation release, a giant salt-hauling truck caught fire underground and burned for hours before anybody discovered it. The report found that "degradation of key safety management programs and safety culture resulted in the release of radioactive material from the underground to the environment."

...The accident raises tough questions about the Energy Department's ability to safely manage the nation's stockpiles of deadly nuclear waste, a job that is already decades behind schedule and facing serious technical challenges. "The accident was a horrific comedy of errors," said James Conca, a scientific advisor and expert on the WIPP. "This was the flagship of the Energy Department, the most successful program it had. The ramifications of this are going to be huge. Heads will roll."

...The WIPP was designed to place waste from nuclear weapons production into ancient salt deposits, which would eventually collapse and embed the radioactivity for at least 10,000 years. The dump was dug much like a conventional salt mine, but with a maze of rooms for the waste. It handles low- and medium-level radioactive materials known as transuranic waste, the artificial elements — mainly plutonium — created in the production of nuclear weapons. Until the Valentine's Day disaster, it had been operating without significant problems for 15 years.

...The plant's ventilation and filtration system was supposed to have prevented any of the radioactive material from reaching the environment. But investigators discovered that the Energy

Department never required the ventilation system to meet nuclear safety standards. When monitors detected radiation, dampers were supposed to route the ventilation air into filters to prevent any radioactivity from reaching the surface, but the dampers leaked and thousands of cubic feet of air bypassed filters.

Luckily, the accident occurred when nobody was working in the mine itself. But the emergency response moved in slow motion. The first high-radiation alarm sounded at 11:14 p.m. When control room managers tried to find the responsible on-call radiation control expert, they couldn't find the person, according to the investigation report. By morning, workers were attempting to change filters. Not until 9:34 a.m. did managers order 150 or so workers on the

surface of the site to move to a safe location, about 10 hours after the first alarm sounded. It took 13 hours for managers to staff an emergency operation center.

...The radiation doses the workers received during the hours after the accident were a small fraction of the allowable occupational limits and the workers should have no health impacts, Energy Department officials said. Although WIPP operating procedures were faulty, the

dump itself did not cause the accident. The steel drum was packaged at the Los Alamos National Laboratory in New Mexico. The drum principally contained nitrate salts, a byproduct of the chemical process that extracts plutonium, used in the triggers of hydrogen bombs. Investigators believe that some chemical or packaging change was made at Los Alamos, and they are looking at whether that change was ever approved by senior laboratory chemists. A team of experts from WIPP may also have missed the change.

...Other drums of the same material are still at the WIPP, as well as in storage at Los Alamos and at a private dump in Texas, and nuclear experts

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say another leakage accident cannot be ruled out. Robert Alvarez, a former assistant energy secretary and a recent critic of the department's performance, said the risk of a radioactive release at the WIPP was supposed to be one event every 200,000 years, not one in 15 years. "This was a cardinal violation," he said. Conca, among others, argues that the fundamental technology of the WIPP is sound, and he hopes officials do not overreact to the accident. But under the best of circumstances, the WIPP will probably be closed for 18 months, a shutdown that is causing concern in states that are already impatient with the Energy Department's slow cleanup schedule.

The Energy Department has notified New Mexico officials that, as a result of the WIPP closure, it will fail to meet its deadlines for removing all of the 3,706 cubic meters of transuranic waste at Los Alamos. ...At Washington state's Hanford Site, the WIPP closure may lead to additional delays in shipping out 8,841 drums, boxes and other containers of transuranic materials to the New Mexico plant, said Deborah Singleton of the state's Department of Ecology. IRelated Nuclear plants ill-prepared for worst-case scenarios, report says....

Source: <http://www.latimes.com/>, 23 August 2014.



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