



NUCLEAR SECURITY



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

Vol 11, No. 16, 15 JUNE 2017

OPINION – Sitakanta Mishra

Pakistan's Nuclear Threshold: Not as Low as Perceived

At slightest pretext, Pakistan threatens to use nuclear weapons against anyone it feels insecure, and more so against India. (Pakistani Defence Minister Khawaja Muhammad Asif Tweeted a veiled nuclear threat at Israel, apparently after taking affront at a fake news article where Israel purportedly warned Islamabad against meddling in Syria.) The introduction of TNWs into its inventory has been portrayed to have sufficiently lowered its nuclear threshold. Rawalpindi appears to believe that there is no space for conventional war, and it can use nuclear weapons on the battlefield if New Delhi crosses its 'redlines' without triggering a 'massive' nuclear retaliation. On the contrary, strategists in India assert that a limited conventional war can be fought and won below Pakistan's nuclear threshold.

Almost two decades have been passed since the 1998 nuclear tests by India and Pakistan during which existence of "nuclear weapons may have limited the risks of war, but they do not inhibit either side from engaging in low-level conflicts." The logic of deterrence no doubt holds

The Kargil war in 1999, 'Op Parakram' in 2001-02, and the surgical strike by India in 2016 represent rather a combination of Pakistani boldness and Indian calibrated action that have surprised proponents of the 'stability-instability paradox'. It "remains unclear and will always remain so" as to "how deep into Pakistan would be deep enough for India to obtain its objectives; and how deep would be too much for Pakistan." Therefore, the assumption that Pakistani nuclear threshold is 'low' is arbitrary, unrealistic, and unfashionable now.

in South Asia, but the same does not obviate limited conventional conflicts. The Kargil war in 1999, 'Op Parakram' in 2001-02, and the surgical strike by India in 2016 represent rather a combination of Pakistani boldness and Indian calibrated action that have surprised proponents of the 'stability-instability paradox'. It "remains unclear and will always remain so" as to "how deep into Pakistan would be deep enough for India to obtain its objectives; and how deep would be too much for Pakistan." Therefore, the assumption that Pakistani nuclear threshold is 'low' is

CONTENTS

- ☞ OPINION
- ☞ NUCLEAR STRATEGY
- ☞ BALLISTIC MISSILE DEFENCE
- ☞ URANIUM PRODUCTION
- ☞ NUCLEAR ENERGY
- ☞ NUCLEAR COOPERATION
- ☞ NUCLEAR PROLIFERATION
- ☞ NUCLEAR SECURITY
- ☞ NUCLEAR SAFETY
- ☞ NUCLEAR WASTE MANAGEMENT

arbitrary, unrealistic, and unfashionable now. This study vilifies the assumption that Pakistani nuclear threshold is abysmally low.

Imagined Nuclear Threshold: Though the exact contours of Pakistan's nuclear threshold is unclear, Khalid Kidwai, the former head of SPD, in 2001 delineated four generic "redlines": spatial threshold (loss of large parts of territory), military threshold (destruction of large parts of land or air forces), economic threshold (economic strangulation), and political threshold (political destabilization or large scale internal subversion). Understandably these four redlines reinforce deterrence against an enemy who threatens Pakistan's 'survival'. In 2002 then-President Pervez Musharraf stated that "nuclear weapons are aimed solely at India," and would only be used if "the very existence of Pakistan as a state" was at stake. "Indeed, no Indian leader has considered threatening the survival of Pakistan."

However, pronouncements by Pakistani political and military leaders on various occasions to use nuclear weapons bring one the impression that Pakistan showcases a maximalist threshold posture even though it is aware of the illogic of climbing on the escalation ladder, thus losing its credibility. A day before the terrorist attack in Uri, Pakistan Defence Minister reportedly said that "We are always pressurized time and again ... that we have more tactical weapons than we need. If anyone steps on our soil and if someone's designs are a threat to our security, we will not hesitate to use those weapons for our defense." Expanding the threat to use nuclear weapons "beyond simply ensuring national survival is problematic." The nuclear threshold has to be higher than that for it to have any meaning. The cross-LoC strike by India in September 2016 has indeed exposed the "basic contradiction between the logic of Pakistan's nuclear threats and the illogic of actually carrying out such threats", aptly says Prof. Rajagopalan.

Expanding the threat to use nuclear weapons "beyond simply ensuring national survival is problematic." The nuclear threshold has to be higher than that for it to have any meaning. The cross-LoC strike by India in September 2016 has indeed exposed the "basic contradiction between the logic of Pakistan's nuclear threats and the illogic of actually carrying out such threats", aptly says Prof. Rajagopalan.

The threat of use of TNWs by Pakistan did not deter India from limited conventional actions to punish Pakistan. The surgical strike by India has challenged the perceived 'low nuclear threshold' and "disgraced Pakistan's nuclear red lines and in all likelihood, pushed them back a bit." It tore apart the escalation theory by Pakistan and proved Pakistan's nuclear sabre rattling bluff. C. Raja Mohan rightly observes that there is a growing belief in New Delhi that "the time has come to call Pakistan's nuclear bluff. If it does not, India places itself in permanent vulnerability to cross-border terrorism from Pakistan."

TNWs and Nuclear Threshold: Possession of TNWs by Pakistan is viewed to have significantly lowered nuclear threshold in South Asia. But introspection on the Pakistani calculation behind TNWs would reveal that "Pakistan is not seeking to exploit the military utility of TNWs"; rather it aims "to reclaim the space that India maintains exists for a conventional war even in the presence of nuclear weapons."

If one extrapolates the Cold War experience to the South Asian environment, it would reveal that the motivation behind Pakistan's pursuit of TNWs against the conventionally superior India stems from NATO's perceived military inferiority against the Soviet Union. But Pakistan overlooks the reasons for which the US withdrew most of the TNWs from Europe in 1991. Certainly, US goal was to deter any conventional attack by the Soviet Union on Western Europe. It also wanted to avoid any escalation of the conflict to a full fledged nuclear war between them. But the TNWs were "proved to be useless militarily as nuclear use at the tactical level would lead to a strategic response and an uncontrollable escalation. Pakistan, however, has embraced this discarded strategy..."

The prevailing myth in Pakistan is that the "actions at the tactical or operational level have no strategic implications. Pakistan considers the TNW is a

deterrent at best, and a war termination weapons at worst." When it comes to actual use of TNWs, as argued by Rajesh Basrur, Pakistan "will be self-deterred. ... The nuclear detonations that occur – even if limited – will be either within Pakistan's territory or so close to it that the fallout will likely affect its own population." As both India and Pakistan are introducing dual-use delivery vectors that "make it difficult to discriminate between incoming nuclear and conventional attacks".

When it comes to actual use of TNWs, as argued by Rajesh Basrur, Pakistan "will be self-deterred. ... The nuclear detonations that occur – even if limited – will be either within Pakistan's territory or so close to it that the fallout will likely affect its own population." As both India and Pakistan are introducing dual-use delivery vectors that "make it difficult to discriminate between incoming nuclear and conventional attacks.

According to Pakistani Foreign Secretary Aizaz Chaudhary (October 20, 2015), Pakistan is formalizing its plans to use this low-yield or so-called "tactical" nuclear weapons in a potential future conflict with India. But Pakistan has been quite on details on its redlines and parameters for use of TNWs. General Asad Durrani, former DG ISI Pakistan, said in 2003 that Pakistan does not "identify those core interests that, if threatened, could trigger a nuclear retort. These are elements of operational planning and stating them could betray a country's conventional limits." Given the opaqueness, Pakistan's nuclear threshold is subject to India's interpretation; undeterred by the TNWs India will decide on its own terms the level of Pakistani threshold – would be proportionate to India's concerns and grievances against Pakistani misadventure.

What factors lower the nuclear threshold in South Asia. Is it the miniaturization of nuclear warheads and short-range nuclear-capable vectors, or constant harping by Pakistan on the nuclear conflict scare? As India does not differentiate between 'strategic' and 'tactical' weapons, lowering of threshold does not bring any qualitative change.

For example, a deep penetration by India into the barren desert area of Pakistan, in response to Pakistani-backed terrorist infiltration, is unlikely to breach its nuclear threshold. Air strikes against the terrorist infrastructure in POK not likely to evoke nuclear response either. Pakistan will not resort to nuclear weapons until the Indian defense forces advance well into PoK or threaten Pakistan side

of Punjab. Therefore, fixing of nuclear threshold in South Asia would largely depend on the evolving circumstances, therefore will remain dynamic.

Also, one need to understand what factors lower the nuclear threshold in South Asia. Is it the miniaturization of nuclear warheads and short-range nuclear-capable vectors, or constant harping by Pakistan on the nuclear conflict scare? As India does not differentiate between 'strategic' and 'tactical' weapons, lowering of threshold does not bring

any qualitative change.

Takeaways: Irrespective of Pakistani assertion of the low nuclear threshold, India will respond with conventional military force, may be limited in scope, to any Pakistani misadventure. Limited conventional conflict remains a viable option in South Asia under the nuclear overhang. India would continue with the straightforward nuclear posture of 'deterrence by punishment', where 'strategic' or 'tactical' is irrelevant. Therefore, TNWs have little utility in South Asian context; especially no major advantages seem to accrue from them by Pakistan. The hardest lesson for Pakistan is that its "nuclear romanticism" based on the idea that NTWs can solve its conventional military imbalance vis-a-vis India only guarantees larger nuclear exchange.

Interestingly, 'denial' of occurrence of an offensive act by the enemy can be an effective strategy to sideline the pressure or compulsion to respond. Pakistan's denial of the surgical strike by India cross-LoC has effectively saved its face from humiliation. This provides scope and room for India to unleash further such strikes if situation

warrants for the fact that this does not breach Pakistani nuclear threshold. In fact, the 1999 Kargil war, the 2001-02 crisis, and the surgical strike “can be seen as New Delhi’s attempt to test Pakistan’s nuclear threshold.”

More importantly, Pakistan though has reserved the first-use of nuclear weapons option, it proclaims to use them as “the last resort...if Pakistan is threatened with extinction.” If this is to be believed, Pakistan will first mobilize and exhaust all its conventional forces at its disposal. Though not comparable to India’s, Pakistan has piled up a sizable conventional force and the limits of its conventional force must not be underestimated. Therefore, the perception of ‘low nuclear threshold’ must be viewed through the prism of “last resort” and limits of its conventional force.

Lastly, the role of international community in Indo-Pak conflict has been exaggerated. In fact, Pakistan assumes that in the case of a war, the international community will immediately intervene and stop India from continuing its conventional campaign or undertaking nuclear retaliation. With the ascendance of India’s global clout along with its restraint behavior, New Delhi’s response to Pakistani misadventures would not ring strong alarm bells, unlike before.

All these do not necessarily suggest India treat nuclear issues involving Pakistan carelessly. Pakistan is a risk-acceptant state capable of “irrational” strategic surprises. But India will “demonstrate to Pakistan that exaggerated nuclear bluff will no longer go unchallenged.” Since nuclear weapons are here to stay, Indian forces have to be prepared to operate in a radioactive environment that may be forced upon them by Pakistani actions. Reportedly India is gearing for underground control rooms, NBC Protection Suits for its Armoured Personnel Carriers (APC), radiation proof shelters, monitoring technology, etc. which needs to be expedited.

Source: <http://www.indrastra.com/>, 10 June 2017.

OPINION – Swaran Singh

NSG and India’s Changing Diplomacy

Delegations from various nations will be arriving at the beautiful Swiss capital Bern for the 2017 plenary of the NSG. However, India’s efforts to obtain membership have drastically changed this time reflecting quick learning from the hype that had boomeranged at last year’s Seoul plenary.

Riding on the support of the US, a country that had obtained it a special ‘waiver’ in 2008, New Delhi not only formally applied for NSG membership in May 2016, but also launched an aggressive diplomatic footwork including an unannounced visit of its foreign secretary to Beijing—seen as a major outlier among the 10 nations of the 48-member group who remain unconvinced of India’s credentials.

Given that the NSG works on consensus, extensive discussions at Seoul did not deliver membership to India. This made the spokesperson of India’s ministry of external affairs

blame “one country”. This marked the beginning of a visible dip in China-India ties that saw its lowest point when India abstained from Beijing’s Belt and Road Forum in May. The move has made India’s membership “more complicated”, said Li Huilai, China’s assistant minister for foreign affairs. This means India’s entry into the NSG will not be happening in any hurry.

One, India has given up direct negotiations with Beijing since the last two parleys between China’s chief nuclear negotiator Wang Qun and India’s secretary for disarmament Amandeep Gill that happened in September and October 2016. PM Modi is believed to have raised the NSG issue during his recent meeting with Chinese President Xi Jinping. Two, in the face of complete silence of President Trump on whether the US will engage China to make it support India’s NSG bid, New Delhi has begun engaging old friend Russia and various European countries hoping to use their

In the face of complete silence of President Trump on whether the US will engage China to make it support India’s NSG bid, New Delhi has begun engaging old friend Russia and various European countries hoping to use their good offices to, not pressurise, but convince the outliers on India’s bid.

good offices to, not pressurise, but convince the outliers on India's bid.

But nuclear giants Westinghouse and Areva are in deep financial crisis and likely to renege on their contracts further limiting India's leverages with America and France. Thus in the face of decline in global interest in nuclear power and the shrinking leverages of New Delhi, India has begun talking of indigenisation of nuclear technologies signalling to its major suppliers like Russia that they must use their leverages to convince Beijing on India's NSG membership.

China, of course, continues to persist with its "two-stage" approach for all non-NPT signatories—to first evolve a general criteria on membership followed by a separate debate on each of these cases. India believes it cannot be equated with any other fresh case as it has already obtained a NSG special 'waiver' to freely participate in global commerce in nuclear materials and technologies. What makes Beijing's approach painful is that by treating New Delhi as a fresh case, it equates India with Pakistan which had also applied for NSG membership during May 2016. China's recent dalliance with Pakistan, especially its 'flagship' China-Pakistan Economic Corridor, makes India suspicious of its motives.

India's entry into the MTCR last year conferred it the advantage of potentially blocking China's entry into the group. But it also weakened India's leverages compared to its original policy of negotiating a 'package deal' on joining all four technology control regimes—NSG, MTCR, Australia Group and Wassenaar Arrangements (meant to control international flow of nuclear, missile, chemical and conventions weapons' materials and technologies).

Leaders of all five permanent members of the UNSC visited India during July–December 2010. With their endorsement of India's membership to these four regimes, India was inching towards a metamorphosis: from being an outlier to becoming an integral part of global governance on flow of advanced technologies. Now India has to negotiate each of these individually.

Source: The New Indian Express, 14 June 2017.

OPINION – Daisaku Ikeda

Ban Treaty Offers Chance for a World Free Of Nuclear Arms

The crucial second round of negotiations on a treaty to prohibit nuclear weapons will take place from June 15 at the UN headquarters in New York. Almost 130 countries, or two thirds of UN member states, participated in the first round of negotiations held at the end of March 2017, which became the site of vigorous debate with the active participation of civil society.

Nuclear weapons are capable of annihilating humankind and the global ecosystem, and the threat they pose is, if anything, growing. The upcoming negotiations seek to achieve a fundamental breakthrough in this situation.

"We hibakusha have no doubt that this treaty can — and will — change the world." This statement made by an atomic bomb survivor at the March 2017 negotiations was met by very long applause from participants. This expressed a heartfelt support that is shared by many people, regardless of nationality.

On 22 May 2017, a draft text for the convention prohibiting nuclear weapons was released by the president of the negotiating conference. Grounded in a deep concern about the catastrophic humanitarian consequences of any use of nuclear weapons, it would prohibit not only the use but also possession and development of nuclear weapons.

The motivating spirit of the convention is expressed in the preamble that includes the words: "Mindful of the suffering of the victims of the use of nuclear weapons (Hibakusha) as well as of those affected by the testing of nuclear weapons" This reflects the strong desire of the world's hibakusha that no one else should ever have to suffer what they have endured. We must remember that the current state of nuclear confrontation is the product of specific historical processes. It is not an immutable "given" of the international order.

In fact, more than 110 states have chosen security arrangements that do not depend on nuclear arms, by establishing and being part of nuclear-weapon-free zones. Among them are a number of states that once explored the possibilities of nuclear weapons development but relinquished them.

In fact, more than 110 states have chosen security arrangements that do not depend on nuclear arms, by establishing and being part of nuclear-weapon-free zones. Among them are a number of states that once explored the possibilities of nuclear weapons development but relinquished them.

...It is regrettable, however, that the nuclear-weapon states and almost all states that depend on the extended deterrence of their nuclear-armed allies, including Japan, did not participate in the first round of negotiations.

Yet all countries, including nuclear-weapon states and nuclear-dependent states, have expressed deep and shared concern regarding the catastrophic humanitarian consequences of any use of nuclear weapons. This shared concern is cited in the draft convention and, earlier, was contained in the final document unanimously adopted by the 2010 NPT Review Conference.

...In this context, the participation of the nuclear-dependent states, particularly Japan, the only country that has experienced nuclear attacks in wartime, will be crucial.

In April 2016, Japan joined with nuclear-weapon states and nuclear-dependent states at the Group of Seven Hiroshima Foreign Ministers' Meeting to issue a joint statement that included the following declaration: "We share the deep desire of the people of Hiroshima and Nagasaki that nuclear weapons never be used again." Japan should uphold this declaration and decide to take part in the next round of negotiations.

The desire for peace emanating from Hiroshima and Nagasaki is nothing other than the desire that no other country become the target or perpetrator

of a nuclear attack. A convention to prohibit nuclear weapons would establish this as humanity's shared norm, and Japan's mission lies in doing everything it can to achieve this....

...A convention prohibiting nuclear weapons will serve as a crucial impetus for fulfilling the disarmament obligations of the NPT. Its

adoption will generate decisive momentum for nuclear weapons abolition, and it is thus vital that this be achieved by the end of the second negotiating session on 07 July 2017....

Source: Japan Times, 05 June 2017.

OPINION – Zachary Keck

The Big China Nuclear Threat No One is Talking About

One of the most consistent aspects of China's military policy is likely to undergo a significant transformation. Since its first nuclear test in 1964, China has maintained a relatively small nuclear arsenal designed to hold adversaries' population centers at risk. Even as it has modernized its conventional forces to

This smaller arsenal is consistent with China's different perspective about the nature of deterrence, as well as its no-first-use nuclear doctrine. At the same time, a couple of technical developments are likely to propel China to undertake a significant nuclear buildup in the coming years.

"fight and win wars" against first-class militaries like that of the US, China's nuclear arsenal is estimated to contain just 264 warheads, far smaller than the 1,550 strategic nuclear warheads Russia and America will each deploy under the New START, to say nothing of the nearly thirty thousand warheads they maintained during the Cold War.

This smaller arsenal is consistent with China's different perspective about the nature of deterrence, as well as its no-first-use nuclear doctrine. At the same time, a couple of technical developments are likely to propel China to

undertake a significant nuclear buildup in the coming years.

The first of these is China's acquisition of a viable nuclear triad for the first time. For most of its history as a nuclear power, Beijing has primarily relied on single-warhead land-based ballistic missiles to deliver its nuclear weapons. After decades of false starts, however, China has now deployed a sea-based deterrent in the form of the JIN-class (Type 094) SSBNs. China has already commissioned four JIN-class SSBNs and will build at least another one of these vessels. Each Jin-class SSBN has twelve missile tubes and carries JL-2 SLBMs, which have a range of 7,500 kilometers. Some reports suggest the JL-2 can be equipped with MIRVs that allow each missile to carry between two and eight warheads. Thus, the five Jin-class SSBNs will require somewhere between sixty and 480 nuclear warheads. Even the low end of this estimate represents nearly one-quarter of China's estimated warheads.

Furthermore, according to the Pentagon, China will begin fielding its next-generation SSBN, the Type 096, sometime in the coming decade, and these will be armed with the JL-3 SLBM. It's unclear how many Type 096 SSBNs China will build, and whether the JL-3 SLBM will carry multiple warheads or not, but current reports suggest the Type 096 sub will have twenty-four launch tubes. Assuming China also builds five Type 096 subs and each JL-3 only carries one warhead, this will require 120 nuclear warheads, nearly half of China's estimated arsenal. Including the low-end estimate of the number of warheads the Type 094 SSBN will consume,

Beijing's sea-based deterrent will account for at least 75 percent of its entire stockpile.

This is especially worrisome because China's land-based ballistic missiles are simultaneously also requiring more warheads. As I've noted before, China is MIRVing its traditional land-based ballistic missiles. According to press reports, earlier this year China tested its DF-5C missile using ten MIRVed warheads. It is also believed to be MIRVing its older DF-5B, with somewhere between three and ten warheads. It's unknown how many DF-5C missiles China possesses, but the Pentagon in the past has estimated China has around twenty DF-5A and DF-5B missiles. Assuming half of these are DF-5B, and those are equipped with three warheads apiece, and China builds ten DF-5C missiles with ten warheads a piece, this would amount to 130 warheads, or about half China's entire arsenal. Moreover, China is also building a new, more advanced intercontinental ballistic missile ICBMs, the DF-41, which will also be MIRVed. Indeed, Chinese state-run media have presented graphics of the DF-41 carrying ten warheads per missiles. If China were to build ten of these missiles each carrying ten warheads, that would be another hundred missiles. Together with the estimates from the DF-5B and DF-5C, this would equal 230 warheads, or 87 percent of its arsenal.

Of course, some of these numbers may be inflated. China might not build this many missiles, or might not MIRV all these missiles, and some of the extra warheads will no doubt be decoys. Still, the inescapable fact remains: technical factors will compel China to substantially increase the number

China has already commissioned four JIN-class SSBNs and will build at least another one of these vessels. Each Jin-class SSBN has twelve missile tubes and carries JL-2 SLBMs, which have a range of 7,500 kilometers. Some reports suggest the JL-2 can be equipped with MIRVs that allow each missile to carry between two and eight warheads. Thus, the five Jin-class SSBNs will require somewhere between sixty and 480 nuclear warheads.

Assuming half of these are DF-5B, and those are equipped with three warheads apiece, and China builds ten DF-5C missiles with ten warheads a piece, this would amount to 130 warheads, or about half China's entire arsenal. Moreover, China is also building a new, more advanced intercontinental ballistic missile ICBMs, the DF-41, which will also be MIRVed.

of warheads in its arsenals in the years ahead.

Fissile material—the highly enriched uranium and plutonium that make up the core of a nuclear bomb—will not pose any obstacles to a buildup. Currently, Beijing is estimated to have between fourteen and eighteen tons of highly enriched uranium and 1.3–2.3 tons of weapon-grade plutonium stockpiled. This enough for anywhere between 750 and 1,600 nuclear weapons— and perhaps many more, depending on the sophistication of the design. Moreover, its expansive civilian nuclear ambitions will give it the capability to produce any additional fissile material it may need in the future. Indeed, Hui Zhang, one of the foremost experts on China’s nuclear industry, has estimated that by 2020 China will have an excess enrichment capability of three million separative work units (SWU) per year, meaning it will be able to produce around seven hundred bombs’ worth of highly enriched uranium each year without sacrificing any of its nuclear energy needs.

This isn’t meant to suggest that China is going to substantially overhaul the size of its nuclear arsenal overnight. If history is any guide, China is likely to build up its arsenal in a cautious, methodical manner. Nonetheless, it is undeniable that China’s nuclear arsenal is going to get larger in the years ahead, and US nuclear and arms-control strategy must account for this fact.

Source: Zachary Keck is the former managing editor of the National Interest, The National Interest, 02 June 2017.

OPINION – Emma Borden, Suzanne Maloney

Will the Iran Nuclear Deal Survive?

As the most significant and contentious achievement of the Obama administration’s foreign policy, the Iran nuclear deal has had an uncertain future since the November 2016 presidential election. Despite his harsh criticism of the agreement, President Donald Trump recently renewed waivers of sanctions on Iran, extending American compliance with the deal, known as the JCPOA, for at least three more months.

It’s too soon to say if the waivers, together with the reelection of Iranian President Hassan Rouhani, who championed the agreement, will sustain the deal. In fact, as part of a broader strategy of ramping

up pressure on Iran, Washington is advancing tough new measures to penalize Tehran for its ballistic missile program and other policy concerns. These prospective sanctions, and Iran’s response, will test the tipping point of US-Iranian tensions and may resolve two persistent uncertainties born of the JCPOA: Did the deal effectively rule out any future US use of sanctions? And can the Iran nuclear deal outlive its opponents?

Sanctions under the Trump Administration: Even with the closely-watched decision to issue the waivers, the Trump administration sought to emphasize its antipathy toward the deal and toward

Tehran, announcing alongside the waiver renewals penalties on seven Iranian and Chinese targets involved in Iran’s missile program under a 2005 executive order isolating WMD proliferators. These designations follow similar action in February and

Currently, Beijing is estimated to have between fourteen and eighteen tons of highly enriched uranium and 1.3–2.3 tons of weapon-grade plutonium stockpiled. This enough for anywhere between 750 and 1,600 nuclear weapons— and perhaps many more, depending on the sophistication of the design. Moreover, its expansive civilian nuclear ambitions will give it the capability to produce any additional fissile material it may need in the future.

Even with the closely-watched decision to issue the waivers, the Trump administration sought to emphasize its antipathy toward the deal and toward Tehran, announcing alongside the waiver renewals penalties on seven Iranian and Chinese targets involved in Iran’s missile program under a 2005 executive order isolating WMD proliferators.

March, when several dozen individuals and entities were named under the robust US sanctions regime related to missiles, terrorism, and other issues that was left untouched by the nuclear deal.

Critics of the deal described the two-step approach as “waive-and-slap” and insist that it offers “an elegant way to maintain pressure on Iran.” And they seek to go beyond that, by establishing new penalties on Iran. Since Trump’s inauguration, Congress has introduced seven bills and resolutions that seek to sanction Iran. ...The Senate Foreign Relations Committee overwhelmingly passed the Countering Iran’s Destabilizing Activities Act of 2017, which is supported by an equal number of Republicans and Democrats, including many who supported the Iran nuclear deal.

The bill mandates sanctions on those involved in Iran’s ballistic missile program, applies terrorism sanctions to the Revolutionary Guard Corps, and requires the president to block the property of anyone (or any entity) involved in transactions of prohibited arms and related material to or from Iran. The House is moving ahead with similar measures, including the Iran Ballistic Missiles and International Sanctions Enforcement Act, which only targets missile development. The House also passed legislation targeting supporters of the Assad regime, including Russia and Iran.

The issue of Iran’s missile program has occupied a central position in the debate over the nuclear deal. Although missile development represented a core element of the UN resolutions that preceded the agreement, the JCPOA did not address the issue. UNSCR 2231, which endorsed the deal, merely “calls upon” Iran to halt the program for eight years, but does not legally require Tehran to do so. On this basis, European and Russian officials have opposed new penalties over Iran’s ballistic missile tests. Tehran maintains that its missiles are not designed to carry nuclear weapons and its leadership insists that Iran “will not wait

for [US] permission” to carry out such tests.

Sanctions and the International Community:

Washington has been sanctioning Iran for nearly 40 years, beginning with measures prompted by the November 1979 seizure of the US Embassy in Tehran and its diplomats. Most of the original measures were removed as part of the 1981 Algiers Accord, which ended the hostage crisis, but over the intervening years, the US repeatedly relied upon sanctions as a means of penalizing and deterring the Islamic Republic’s destabilizing regional policies and repression of its own citizens.

Washington’s deployment of coercive diplomacy traditionally drew only limited international support. That began to change in 2006, as mounting concerns over Iran’s nuclear program were referred to the UN Security Council. Over the course of the next seven years, Tehran found itself the target of an increasingly complex and comprehensive array of international economic restrictions enacted by the UN, the European Union, and a number of individual states around the world.

The January 2016 implementation of the nuclear deal required all parties to lift or waive sanctions related to Iran’s nuclear program, enabling Tehran to revive oil exports, reestablish linkages with the international financial system, and rebuild trade and investment relationships with traditional partners in Europe and Asia. The deal did not require relief of all sanctions, however, and a vast array of US measures unrelated to the nuclear crisis remains in place. In addition, the EU maintains an embargo on sales to Iran of proliferation-sensitive items and gear for internal repression.

Violations? Depends Who You Ask: The language of the JCPOA is very clear: the deal does not terminate all sanctions levied against Iran by the US or other governments, nor does it prohibit future measures. Throughout the negotiations and in the

The deal did not require relief of all sanctions, however, and a vast array of US measures unrelated to the nuclear crisis remains in place. In addition, the EU maintains an embargo on sales to Iran of proliferation-sensitive items and gear for internal repression.

Congressional review of the final terms, US officials from President Obama on down took pains to emphasize these provisions in their efforts to rebut domestic and regional criticism of the bargain. However, for domestic political reasons, Iran's leadership made nearly diametrically opposing claims; they sold the JCPOA in the most triumphal terms as providing wholesale sanctions relief and an end to all penalties on Iran's economy.

This divergence has repeatedly strained the deal's implementation. Iranians have blamed Washington for a sluggish and uneven economic recovery and depicted routine designations under existing sanctions or steps to extend waived measures as violations of US commitments under the deal. As justification, they can rely on certain passages of the agreement that require all parties to implement the deal "in good faith and in a constructive atmosphere, based on mutual respect, and to refrain from any action inconsistent with the letter, spirit and intent of this JCPOA that would undermine its successful implementation."

While Washington has continued to designate Iranian entities under existing measures, the Obama administration at times seemed to bend over backwards in its efforts to assuage any prospect of buyer's remorse from Iran, for example sending US Treasury officials around the world to help prospective investors navigate the sizable continuing compliance risks in doing business with Iran.

The Trump administration, backed by bipartisan support in Congress, has instead sought to turn up the heat on Tehran, and thanks in part to the efficacy of the nuclear sanctions, is eager to deploy new penalties such as the missile-related sanctions that SFRC passed. The committee softened the language of the bill in order to address concerns expressed by some Democrats

as well as by former Obama administration officials that it should "not...impede [US] commitments under the JCPOA."

What Next?: If, as expected, the missile sanctions pass the full Congress and are signed by President Trump, this will represent the first new US measures put in place since the interim nuclear deal was approved in 2013. In that sense, it will provide the first real test of whether the deal can withstand the application of new economic pressure against Iran. It's unlikely to be the last major milestone. The JCPOA-required waivers of sanctions related to the nuclear program will prompt a steady rhythm of Iran-related decision

If, as expected, the missile sanctions pass the full Congress and are signed by President Trump, this will represent the first new US measures put in place since the interim nuclear deal was approved in 2013. In that sense, it will provide the first real test of whether the deal can withstand the application of new economic pressure against Iran. It's unlikely to be the last major milestone.

points for Trump, most immediately in mid-July 2017, when the administration's review of the nuclear deal is due to be completed.

Also under newfound scrutiny are Treasury Department licenses for Boeing and Airbus to sell planes to Iran Air. The sales were specifically permitted under the deal, but the

licenses have provoked concerns in Washington on the basis of reports that Iran's commercial aircraft directly support its military campaign in Syria. Iran has already begun receiving Airbus planes, and the first Boeing planes are scheduled for delivery in 2018, but measures in the House and Senate have introduced almost identical bills that probe ties between Iran Air and the IRGC.

Predictably, Tehran has sought to reply to new sanctions in kind. Treasury's recent designations were immediately met by new Iranian sanctions against American individuals and entities, supposedly for US support for Israel, among other reasons. In March, in response to other US sanctions, Iran announced sanctions on 15 US companies for similar reasons.

...Even with Rouhani's victory and if Trump renews the next round of waivers, the continuity of the JCPOA is far from guaranteed. Interestingly, the

agreement's lifeline may lie in Tehran, where Rouhani sought to boost his election prospects by dangling the prospect of further direct bilateral talks to lift remaining sanctions. That would pose profound domestic political challenges, but it signals a rare Iranian acknowledgement that the status quo satisfies neither Iranian nor American interests. In the absence of further dialogue, however, the JCPOA's prognosis is uncertain. Both Washington and Tehran are seeking to avoid responsibility for the death of the deal, but its slow unravelling—by way of provocations, misinterpretations, and escalatory momentum—may be hard to prevent.

Source: Emma Borden is a research assistant and project coordinator and Suzanne Maloney is deputy director and foreign policy senior fellow of Brookings' Center for Middle East Policy. <http://www.globaltrademag.com/>, 12 June 2017.

OPINION – Marty Hart-Landsberg

The Need for a New US Foreign Policy toward North Korea

USA-North Korean relations remain very tense, although the threat of a new Korean War has thankfully receded. Still the US government remains determined to tighten economic sanctions on North Korea and continues to plan for a military strike aimed at destroying the country's nuclear infrastructure. And the North for its part has made it clear that it would respond to any attack with its own strikes against US bases in the region and even the US itself.

This is not good, but it is important to realize that what is happening is not new. The US began conducting war games with South Korean forces in 1976 and it was not long before those included simulated nuclear attacks against the North, and that was before North Korea had nuclear weapons. In 1994, President Bill Clinton was close to

launching a military attack on North Korea with the aim of destroying its nuclear facilities. In 2002, President Bush talked about seizing North Korean ships as part of a blockade of the country, which is an act of war. In 2013, the US conducted war games which involved planning for preemptive attacks on North Korean military targets and "decapitation" of the North Korean leadership and even a first strike nuclear attack.

The threat of war, perhaps a nuclear war, is nothing to play around with. But – and this is important – even if a new war is averted, the ongoing embargo against North Korea and continual threats of war are themselves costly: they promote/legitimize greater military spending and militarization more generally, at the expense of needed social programs, in Japan, China, the US, and the two Koreas.

I don't think we are on the verge of a new Korean war, but the cycle of belligerency and threat making on both sides is intensifying. And it is always possible that a miscalculation could in fact trigger a new war, with devastating consequences. The threat of war, perhaps a nuclear war, is nothing to play around with. But – and this is important – even if a

new war is averted, the ongoing embargo against North Korea and continual threats of war are themselves costly: they promote/legitimize greater military spending and militarization more generally, at the expense of needed social programs, in Japan, China, the US, and the two Koreas. They also create a situation that compromises democratic possibilities in both South and North Korea and worsen already difficult economic conditions in North Korea.

There is a Choice for Peace: We don't have to go down this road – we have another option – but it is one that the US government is unwilling to consider, much less discuss. That option is for the US to accept North Korean offers of direct negotiations between the two countries, with all issues on the table.

The US government and media dismiss this option as out of hand – we are told that (1) the North is a hermit kingdom and seeks only isolation, (2) the country is ruled by crazy people hell bent on war, and (3) the North Korean leadership cannot be trusted to follow through on its promises. But none of this is true.

First: if being a hermit kingdom means never wanting to negotiate, then North Korea is not a hermit kingdom. North Korea has been asking for direct talks with the United States since the early 1990s. The reason is simple: this is when the USSR ended and Russia and the former Soviet bloc countries in central Europe moved to adopt capitalism. The North was dependent on trade with these countries and their reorientation left the North Korean economy isolated and in crisis.

The North Korean leadership decided that they had to break out of this isolation and connect the North Korean economy to the global economy, and this required normalization of relations with the United States. Since then, they have repeatedly asked for unconditional direct talks with the US in hopes of securing an end to the Korean War and a peace treaty as a first step toward their desired normalization of relations, but have been repeatedly rebuffed. The US has always put preconditions on those talks, preconditions that always change whenever the North has taken steps to meet them.

The North has also tried to join the IMF and World Bank, but the US and Japan have blocked their membership. The North has also tried to set up free trade zones to attract foreign investment, but the US and Japan have worked to block that investment. So, it is not the North that is refusing to talk or broaden its engagement with the global economy; it is the US that seeks to keep North Korea isolated.

Out of Control Militarism: The media portray North Korea as pursuing an out of control militarism that is the main cause of the current dangerous situation. But it is important to

recognize that South Korea has outspent North Korea on military spending every year since 1976. International agencies currently estimate that North Korean annual military spending is \$4-billion while South Korean annual military spending is \$40-billion. And then we have to add the US military build-up.

The media portray North Korea as pursuing an out of control militarism that is the main cause of the current dangerous situation. But it is important to recognize that South Korea has outspent North Korea on military spending every year since 1976. International agencies currently estimate that North Korean annual military spending is \$4-billion while South Korean annual military spending is \$40-billion. And then we have to add the US military build-up.

North Korea does spend a high percentage of its budget on the military, but that is because it has no reliable military ally and a weak economy. However, it has largely responded to South Korean and US militarism and threats, not driven them. As for the development of a nuclear weapons program: it was

the US that brought nuclear weapons to the Korean peninsula. It did so in 1958 in violation of the Korean War armistice and threatened North Korea with nuclear attack years before the North even sought to develop nuclear weapons.

Third: North Korea has been a more reliable negotiating partner than the USA. Here we have to take up the nuclear issue more directly. The

Critically, North Korean tests have largely been conducted in an effort to pull the US into negotiations or fulfill past promises. And the country has made numerous offers to halt its testing and even freeze its nuclear weapons program if only the US would agree to talks.

North has tested a nuclear weapon 5 times: 2006, 2009, 2013, and twice in 2016. Critically, North Korean tests have largely been conducted in an effort to pull the US into negotiations or fulfill past promises. And the country has made numerous offers to halt its testing and even

freeze its nuclear weapons program if only the US would agree to talks.

North Korea was first accused of developing nuclear weapons in early 1990s. Its leadership refused to confirm or deny that the country had succeeded in manufacturing nuclear weapons but said that it would open up its facilities for inspection if the US would enter talks to normalize

relations. As noted above, the North was desperate, in the wake of the collapse of the USSR, to draw the US into negotiations. In other words, it was ready to end the hostilities between the two countries.

The US government refused talks and began to mobilize for a strike on North Korean nuclear facilities. A war was averted only because Jimmy Carter, against the wishes of the Clinton administration, went to the North, met Kim Il Sung, and negotiated an agreement that froze the North Korean nuclear program.

The North Korean government agreed to end their country's nuclear weapons program in exchange for aid and normalization. And from 1994 to 2002 the North froze its plutonium program and had all nuclear fuel observed by international inspectors to assure the US that it was not engaged in making any nuclear weapons. Unfortunately, the US did not live up to its side of the bargain; it did not deliver the aid it promised or take meaningful steps toward normalization.

In 2001 President Bush declared North Korea to be part of the axis of evil and the following year unilaterally canceled the agreement. In response, the North restarted its nuclear program. In 2003, the Chinese government, worried about growing tensions between the US and North Korea, convened multiparty talks to bring the two countries back to negotiations. Finally, in 2005, under Chinese pressure, the US agreed to a new agreement, in which each North Korean step toward ending its weapons program would be matched by a new US step toward ending the embargo and normalizing relations. But exactly one day after signing the agreement, the US asserted, without evidence, that North Korea was engaged in a program of counterfeiting US dollars

and tightened its sanctions policy against North Korea.

The North Korean response was to test its first nuclear bomb in 2006. And shortly afterward, the US agreed to drop its counterfeiting charge and comply with the agreement it had previously signed. In 2007 North Korea shut down its nuclear program and even began dismantling its nuclear facilities – but the US again didn't follow through on the terms of the agreement, falling behind on its promised aid and sanction reductions. In fact, the US kept escalating its demands on North Korea, calling for an end to North Korea's missile

program and improvement in human rights in addition to the agreed upon steps to end North Korea's nuclear weapons program. And so, frustrated, North Korea tested another nuclear weapon in 2009.

And the US responded by tightening sanctions: In 2012 the North launched two satellites. The first failed, the second succeeded. Before each launch the US threatened to go to the UN and secure new sanctions on North Korea. But the North

asserted its right to launch satellites and went ahead. After the December 2012 launch, the UN agreed to further sanctions and the North responded with its third nuclear test in 2013.

This period marks a major change in North Korean policy. The North now changed its public stance: it declared itself a nuclear state – and announced that it was no longer willing to give up its nuclear weapons. However, the North Korean government made clear that it would freeze its nuclear weapons program if the US would cancel its future war games. The US refused and its March 2013 war games included practice runs of nuclear equipped bombers and planning for occupying North Korea. The North has therefore continued

In 2007 North Korea shut down its nuclear program and even began dismantling its nuclear facilities – but the US again didn't follow through on the terms of the agreement, falling behind on its promised aid and sanction reductions. In fact, the US kept escalating its demands on North Korea, calling for an end to North Korea's missile program and improvement in human rights in addition to the agreed upon steps to end North Korea's nuclear weapons program. And so, frustrated, North Korea tested another nuclear weapon in 2009.

to test and develop its nuclear weapons capability.

Here is the point: whenever the US shows willingness to negotiate, the North responds. And when agreements are signed, it is the US that has abandoned them. The North has pushed forward with its nuclear weapons program largely in an attempt to force the US to seriously engage with the North because it believes that this program is its only bargaining chip. And it is desperate to end the US embargo on its economy.

We lost the opportunity to negotiate with a non-nuclear North Korea when we cut off negotiations in 2001, before the country had a nuclear arsenal. Things have changed. Now, the most we can reasonably expect is an agreement that freezes that arsenal. However, if relations between the two countries truly improve it may well be possible to achieve a non-nuclear Korean Peninsula, an outcome both countries profess to seek.

New Possibilities and Our Responsibilities: So, why does the US refuse direct negotiations and risk war? The most logical reason is that there are powerful forces opposing them. Sadly, the tension is useful to the US military industrial complex, which needs enemies to support the ongoing build-up of the military budget. The tension also allows the US military to maintain troops on the Asian mainland and forces in Japan. It also helps to isolate China and boost right-wing political tendencies in Japan and South Korea. And now, after decades of demonizing North Korea, it is difficult for the US political establishment to change course.

However, the outcome of the recent presidential election in South Korea might open possibilities to force a change in US policy. Moon Jae-in, the winner, has repudiated the hard-line policies of his impeached predecessor Park Guen-Hye, and

declared his commitment to re-engage with the North. The US government was not happy about his victory, but it cannot easily ignore Moon's call for a change in South Korean policy toward North Korea, especially since US actions against the North are usually presented as necessary to protect South Korea. Thus, if Moon follows through on his promises, the US may well be forced to moderate its own policy toward the North.

What is clear is that we in the US have a responsibility to become better educated about US policy toward both Koreas, to support popular movements in South Korea that seek peaceful relations with North Korea and progress toward reunification, and to work for a US policy that promotes the demilitarization and normalization of US-North Korean relations....

Source: Martin Hart-Landsberg is Professor Emeritus of Economics at Lewis and Clark College, Portland, Oregon; and Adjunct Researcher at the Institute for Social Sciences, Gyeongsang National

University, South Korea, <https://socialistproject.ca/>, 13 June 2017.

Why does the US refuse direct negotiations and risk war? The most logical reason is that there are powerful forces opposing them. Sadly, the tension is useful to the US military industrial complex, which needs enemies to support the ongoing build-up of the military budget. The tension also allows the US military to maintain troops on the Asian mainland and forces in Japan.

NUCLEAR STRATEGY

NORTH KOREA

DPRK Threatens to Drop N-Bomb on New York to Prove Trump Tweet Wrong

North Korea has hinted that it could test a long range missile capable of hitting New York, months after President Donald Trump insisted: "It won't happen". Accusing the US leader of underestimating the secretive Communist state's capabilities, an article in state-run newspaper Rodong Sinmun, suggested that it was close to developing an ICBM.

"Trump blustered early this year that the DPRK's final access to a nuclear weapon that can reach the US mainland will never happen," the editorial

said, using an abbreviation for the country's official name, the Democratic People's Republic of Korea.

"The US is feeling uneasy as this might be proven in practice. The strategic weapons tests conducted by the DPRK clearly proved that the time of its ICBM test is not a long way off at all." It added: "The DPRK is about 10,400 km far away from New York, but this is just not a long distance for a strike today."

The quotes were originally reported in *Foreign Policy* magazine. Mr Trump took to Twitter in January after reports suggested that North Korea might test an ICBM. "North Korea just stated that it is in the final stages of developing a nuclear weapon capable of reaching parts of the US," he wrote. "It won't happen!" The pariah state responded with a statement suggesting it would test missiles when its leader Kim Jong-Un wanted to.

Last month, Lieutenant General Vincent Stewart, the US Defence Intelligence Agency chief, said it was "inevitable" that a nuclear weapon launched from North Korea would hit the US mainland. At the end of last month, North Korea released photos of a Scud-type missile being launched and falling into the water off the western coast of Japan - the third such show of military aggression in the space of three weeks.

In recent weeks the US has sent a fleet of warships into North Korean waters, and brought several new launchers for a defence missile system to South Korea to cope with any military threat from north of the border. North Korea maintains that its pursuit of nuclear weapons is solely a means of defending itself from foreign powers such as the US.

Source: Gabriel Samuels, Independent, 13 June 2017.

USA

The Challenge of Modernizing Nuclear Weapons

The Senate Armed Services Committee hosted a hearing on defense nuclear acquisition programs and doctrine. Gen. Robin Rand, commander of the

Air Force Global Strike Command, offered a robust defense of the United States' follow-on intercontinental ballistic missile. He argued that extending the life of the currently deployed Minuteman III ICBMs would not be cheaper than building a follow-on ICBM.

Reliability and survivability are increasingly challenged in the current system, which was developed during the 1960s and 1970s. Rand mentioned how US ICBMs complicate adversaries' targeting because of their quantity and geographic dispersion, also mentioning how they provide the president with a timely response option.

In combination with other elements of the nuclear triad, strategic submarines, and bombers, the system forces adversaries to spread their resources to take into account each

of the legs of the triad as opposed to focusing on defeating one or two strategic systems.

Later, Robert Soofer, deputy assistant secretary of defense for nuclear and missile defense policy, argued that Russian violations of the INF Treaty are not sustainable and

that the United States must take action and increase pressure on Russia on this issue. He is correct. Russia has been using its violation to sow political discord within NATO in an effort to drive a wedge between the United States and its allies. Allies continue to be critical to US national security interests.

Additionally, in the upcoming Nuclear Posture Review, the administration will have a unique opportunity to reassess a number of the Obama administration's misguided nuclear weapon policies insofar as they were based on an assumption of a fundamentally different, and friendlier, relationship between the two countries.

North Korea's ballistic missile program has been a focus of concern for the committee as well. With its latest ballistic missile test, North Korea

Reliability and survivability are increasingly challenged in the current system, which was developed during the 1960s and 1970s. Rand mentioned how US ICBMs complicate adversaries' targeting because of their quantity and geographic dispersion, also mentioning how they provide the president with a timely response option.

demonstrated progress on the re-entry vehicle that could be used to deliver a nuclear weapon.

... The United States currently fields the ground-based midcourse defense interceptors, the only system to protect the US homeland from the North Korean long-range ballistic missile threat. The program achieved a successful intercept, for the first time ever demonstrating a capability to shoot down an ICBM target.

Vice Admiral Terry Benedict, director of the US Navy Strategic Systems Programs, offered a strong defense of the sea-based strategic deterrent. The United States is planning on replacing the Ohio-class strategic submarine with the Columbia-class strategic submarine in the future.

...To help manage cost concerns, the Navy and the Air Force are exploiting missile commonality. Additionally, the United States and the United Kingdom continue their cooperation on the Trident D-5 submarine-launched ballistic missiles.

Finally, James MacStravic, performing the duties of undersecretary of defense for acquisition, technology, and logistics, offered a strong defense on the need to continue nuclear weapons modernization and recapitalization of the nuclear triad. If modernization efforts do not continue, the United States runs "the risk of creating critical capability gaps as legacy systems reach the end of sustainability—negatively affecting the credibility of the nation's strategic deterrent."

Stability of the supply chain and modernization of the command, control, and communications networks were other topics of a great interest to members of Congress. Rightfully so. The United States must ensure secure and reliable communications, including in crisis situations. Similarly, it is essential that microchips and electronics in the upcoming modern systems are not compromised.

In sum, there is no shortage of challenges for the Department of Defense, the administration, and Congress as modernization of the nuclear enterprise continues. The hearing outlined important challenges that the nuclear weapons modernization program will face in the future. The administration and Congress must work together to ensure the US nuclear arsenal remains safe, secure, reliable, and militarily effective.

Source: Michaela Dodge, dailysignal.com/2017/06/12/challenge-modernizing-nuclear-weapons/, 12 June 2017.

BALLISTIC MISSILE DEFENCE

SOUTH KOREA–USA

THAAD Deployment Faces Delay Due to New Environment Assessment

South Korea's defense ministry began preparations for a full-blown environmental impact assessment on the ongoing deployment of the US THAAD missile defense system..., a ministry official said, a move that will inevitably delay its operation.

The move came one day after President Moon Jae-in personally ordered a thorough study on the environmental impact of the advanced missile shield, which, when fully deployed, will consist of at least six rocket launchers with 48 rockets designed to intercept aerial threats flying over the peninsula. The system has been and currently is subject to a "small, informal" environmental assessment afforded by what Seoul's presidential office Cheong Wa Dae has referred to as systematic efforts by the country's defense ministry to make the THAAD battery appear smaller in size and scale.

Under an agreement, Seoul is set to provide some 700,000 square meters of land for the deployment of the missile defense system to be operated for and by US Forces Korea but will boost the country's own defense capabilities as well.

Vice Admiral Terry Benedict, director of the US Navy Strategic Systems Programs, offered a strong defense of the sea-based strategic deterrent. The United States is planning on replacing the Ohio-class strategic submarine with the Columbia-class strategic submarine in the future.

Under the law, any new installation of equipment or facilities that affect more than 330,000 square meters of land must first be assessed for their environmental impact before being deployed or built. The THAAD system, however, was able to be deployed here as the defense ministry provided only 320,000 square meters of land first, subjecting it only to the ongoing "small and informal" evaluation.

The remaining 380,000 square meters of land promised under the THAAD agreement is set to be provided later, again exempting the THAAD deployment from a full-blown environmental impact assessment, Cheong Wa Dae said earlier, citing the outcome of its recent probe on the issue.

The special probe was initially triggered by suspicions that the defense ministry had omitted the delivery of four THAAD rocket launchers into the country in its report to the president and his de facto power transition team. Cheong Wa Dae said the probe has confirmed an "intentional omission" of such facts by a ministry official. He was relieved of his duty after the probe.

A new investigation is now under way to find out who had designed the supply of the land for THAAD in such a way that it was successfully kept from a full-blown environmental impact assessment. The problem is that a new full-blown test may take up to a year and also delay or suspend the ongoing deployment of the THAAD system over the period... Cheong Wa Dae maintains the controversy over the THAAD deployment is strictly local and that Washington understands that as well.

In a meeting with USFK commander Gen. Vincent Brooks and the visiting director of the US Missile Defense Agency V. Adm. James Syring in Seoul ... Chung Eui-yong, Seoul's top security adviser to the president, again explained that the recently concluded probe on the THAAD deployment and

the proposed study on its environmental impact were moves to secure or enhance the legitimacy of the deployment, the presidential office said earlier....

Source: <http://english.yonhapnews.co.kr/>, 06 June 2017.

USA

Suspected N-Korean Drone Photographed Advanced US Missile Defense Site

A possible North Korean drone took numerous photos of a new US missile defense site located in South Korea before crashing near the demilitarized zone between the two countries, the Associated Press reported.

A new investigation is now under way to find out who had designed the supply of the land for THAAD in such a way that it was successfully kept from a full-blown environmental impact assessment. The problem is that a new full-blown test may take up to a year and also delay or suspend the ongoing deployment of the THAAD system over the period.

The drone, according to the report, was found just days after North Korea test-fired a salvo of anti-ship missiles. The test, reportedly overseen by North Korean leader Kim Jong Un, marked the latest escalation following a series of weapon trials in recent months that have steadily ratcheted up tensions in the region.

A South Korean Defense Ministry official...said that the drone was found in a South Korean Border town and that it taken 10 photos of a US THAAD site located in Seongju. The Sony digital camera aboard the drone had hundreds of photos stored, though most of the images were of various agricultural areas in South Korea, according to the report.

The official told the AP that twin-engine unmanned aircraft had crashed because it ran out of fuel but that it had flown farther than other North Korean drones recovered in years past. North Korea is believed to have 300 drones in its arsenal, according to the AP report. ... To combat this emergent issue, the Pentagon has toyed with an array of different countermeasures, from anti-drone rifles to truck-mounted scrambling devices. It is unclear if any of these devices will

be deployed to South Korea.

Source: Thomas Gibbons-Neff, The Washington Post, 13 June 2017.

URANIUM PRODUCTION

RUSSIA

JSC Dalur Gets License for Dobrovolnoye Deposit

JSC Dalur has received a permit to develop the Dobrovolnoye uranium deposit in the Kurgan region of Russia. JSC Dalur is a subsidiary of ARMZ, the uranium mining division of state nuclear corporation Rosatom. The permit was issued according to government decree dated 3 June, ARMZ said on 5 June 2017.

The Dobrovolnoye deposit has estimated reserves of 7067 tonnes of uranium and its commissioning will enable JSC Dalur to increase the volume of uranium recovery from the current 590 tonnes per year to 700 tonnes by 2025, ARMZ said. JSC Dalur has been working in the Kurgan region since 2001 and operates in two deposits there - Dalmatovskoye in the district of the same name and Khokhlovskoye, which is in the Shumikhinsky district. A total of 591 tonnes of uranium were produced last year, the same level as in 2015, ARMZ said. JSC Dalur uses in-situ recovery technology, which is also being used by ARMZ subsidiary JSC Khiagda at the Vitimskoe deposit in the Republic of Buryatia, ARMZ said.

Development of a third uranium deposit in the Kurgan region is "first and foremost" based on the state's requirement to meet the needs of the Russian nuclear industry, ARMZ said. In addition, development of Dobrovolnoye will preserve jobs at the company after the currently operational Dalmatovskoye and Khokhlovskoye deposits have

been depleted. The deposit is expected to contribute more than RUB25 billion (\$439 million) to state funds. ...All preparatory work is expected to be completed before the end of this year. After this, and in accordance with legal requirements, a public hearing and discussion forum will be held with the residents of Zverinogolovsky District. *Source: World Nuclear News, 07 June 2017.*

NUCLEAR ENERGY

FINLAND

Finnish EPR Starts Key Pre-Operational Tests

Cold functional tests have begun at the first-of-a-kind EPR unit at Olkiluoto, Finnish utility Teollisuuden Voima Oyj (TVO) announced.... The unit is expected to be in operation by the end of next year.

Cold functional tests are carried out to confirm whether components and systems important to safety are properly installed and ready to operate in a cold condition. The main purpose of these tests is to verify the leak-tightness of the primary circuit. These tests will take about four weeks to complete, during which time dozens of tests will be carried out at different pressure levels. The reactor's main coolant pumps will be started for the first time. The pressure is gradually increased in the reactor coolant system

to a maximum value significantly exceeding the normal operating pressure.

... In April 2016, TVO submitted its operating licence application for Olkiluoto 3 to the Finnish Ministry of Employment and the Economy. TVO anticipates obtaining the

operating licence towards the end of this year (2017), after which nuclear commissioning will start at the unit. ...The Flamanville EPR in France, construction of which began in 2007, is now expected to start up in late 2018....

Source: World Nuclear News, 12 June 2017.

A total of 591 tonnes of uranium were produced last year, the same level as in 2015, ARMZ said. JSC Dalur uses in-situ recovery technology, which is also being used by ARMZ subsidiary JSC Khiagda at the Vitimskoe deposit in the Republic of Buryatia.

Cold functional tests are carried out to confirm whether components and systems important to safety are properly installed and ready to operate in a cold condition. The main purpose of these tests is to verify the leak-tightness of the primary circuit.

GERMANY-FRANCE

Areva-EWN to Dismantle Brunsbüttel Internals

Areva said the segmentation and packaging of core waste and reactor pressure vessel internals will be carried out underwater. "Proven technology and a qualified underwater robot will be used to enhance efficiency and reduce the time required for the operation," it said.

The single-unit Brunsbüttel plant was among the eight oldest German reactors taken out of service in March 2011. The 771 MWe BWR had been idle since 2007 following a grid-facilitated trip. Brunsbüttel was one of eight older power reactors that had their operating licences withdrawn by the federal government shortly after the Fukushima accident in Japan in March 2011. Vattenfall - which owns a 66.7% stake in the plant with EOn holding the remaining 33.3% - applied in late 2012 to decommission that plant and the approval process is under way.

The contract Vattenfall signed with the Areva-EWN Consortium includes an option for the Krümmel plant, should decommissioning and dismantling also be decided for that plant. The Krümmel plant - comprising a single 1346 MWe BWR - is also jointly owned by Vattenfall and EOn. It too was among the older units that had their operating licences withdrawn in 2011. Vattenfall submitted an application to decommission and dismantle the plant in August 2015.

In May 2015, EOn and Vattenfall signed an agreement to cooperate in the decommissioning and dismantling of their jointly owned nuclear power plants in Germany. The companies said that agreement aimed "to make the decommissioning and dismantling process of their joint venture nuclear power plants as economical as possible".

Energiewerke Nord GmbH (EWN) - which is decommissioning and dismantling the Greifswald and Rheinsberg nuclear power plants in Germany

- was renamed ENW Entsorgungswerk für Nuklearanlagen in February 2017. The company is also responsible for the disposal and interim storage of used fuel and the resulting radioactive wastes. The German government has assigned EWN to manage the final disposal of all radioactive waste from the public sector.

Source: World Nuclear News, 09 June 2017.

JAPAN

Japan Puts Fifth Reactor Back into Operation

Unit 3 of the Takahama nuclear power plant in Japan's Fukui prefecture was restarted on June 6, plant owner Kansai Electric Power Company has announced. Takahama 4 - which had also been kept offline since March 2016 by a court injunction - was restarted last month, joining three other reactors in operation.

Kansai said the 830 MWe (net) PWR was restarted at 2.00pm on 6 June and is expected to achieve criticality.... The company plans to resume electricity generation at Takahama 3 and reconnect it to the grid on 9 June "as the final stage of the periodic outage inspection following various types of tests". It added that "full-scale operation" of the unit will resume in early July after completion of the comprehensive inspection performed by the Nuclear Regulation Authority (NRA).

In late January 2015, 29 residents of Shiga prefecture - part of which lies within 30 kilometres of the Takahama plant - filed a petition with the Otsu District Court for a temporary injunction against operation of Takahama 3 and 4. The court's presiding judge ruled on 9 March 2017 that the safety of the units could not be guaranteed - despite the NRA saying they meet revised safety standards - and issued an injunction against their operation.

Unit 3 of the Takahama plant had resumed operation on 29 January, 2016. Takahama 4 was

The Krümmel plant - comprising a single 1346 MWe BWR - is also jointly owned by Vattenfall and EOn. It too was among the older units that had their operating licences withdrawn in 2011. Vattenfall submitted an application to decommission and dismantle the plant in August 2015.

restarted on 26 February, but was taken off line on 29 February following an automatic shutdown of the reactor due to a "main transformer/generator internal failure".

The injunction then kept both Takahama 3 and 4 offline. Last August, Kansai removed the fuel from both units and placed it in their storage pools.

At unit 3 fuel loading began on 13 May and was completed on 16 May. Three other Japanese reactors are currently in operation: Kyushu Electric's Sendai units 1 and 2 and Shikoku Electric's Ikata unit 3. Another 19 have applied to restart.

Source: World Nuclear News, 06 June 2017.

SOUTH KOREA

Final Shutdown Approaches for Korea's Oldest Reactor

The permanent shutdown of unit 1 of the Kori nuclear power plant has been approved by the South Korea's nuclear safety regulator. The unit - the country's oldest operating reactor unit - will be taken offline on 19 June 2017.

Kori 1 is a 576 MWe pressurized water reactor that started commercial operation in 1978. A six-month upgrading and inspection outage at Kori 1 in the second half of 2007 concluded a major refurbishment program and enabled its relicensing for a further ten years. A subsequent relicensing process could have taken Kori 1 to 2027, but Korea Hydro & Nuclear Power (KHNP) announced in August 2015 that it had withdrawn its application to extend the unit's operating licence. In June 2016, the company applied to decommission the reactor. At a meeting, the Nuclear Safety and Security Commission (NSSC) approved the permanent shutdown of Kori

At unit 3 fuel loading began on 13 May and was completed on 16 May. Three other Japanese reactors are currently in operation: Kyushu Electric's Sendai units 1 and 2 and Shikoku Electric's Ikata unit 3. Another 19 have applied to restart.

1. It said the Korea Institute of Nuclear Safety - a technical support organisation to NSSC - had conducted technical reviews of KHNP's application. These reviews, it said, were focussed on examining whether the reactor could be safely maintained and managed after shutdown.

Based on final NSSC approval, KHNP will take Kori 1 off line at midnight on 19 June, making it South Korea's first nuclear power unit to enter the decommissioning phase. The company is to submit a decommissioning plan for the unit within five years. NSSC said it plans to conduct regular safety inspections of the unit after its closure.

Source: World Nuclear News, 09 June 2017.

JAPAN-USA

Vogtle Agreement Caps Toshiba Obligation

The most Toshiba may have to pay the owners of the Vogtle nuclear power plant construction project is \$3.68 billion under an agreement signed on 9 June 2017. Georgia Power has also finalised a new service agreement with Westinghouse allowing for the transition of project management.

The new agreement fixes Toshiba's maximum obligation under the parental guarantee to \$3.68 billion, with payments to be made in instalments during the period from October 2017 to January 2021. According to Toshiba, the agreement specifies that the agreed maximum cannot be subjected to any further increases or claims by the plant's owners "even in the event of future increases in construction costs.

Toshiba Corp is the parent company of Westinghouse - contractor for the project to build the two AP1000s at Vogtle in Georgia - which filed for Chapter 11 bankruptcy in March. A parental guarantee obligation was agreed by Toshiba and Vogtle's owners - Southern subsidiary Georgia Power (45.7%), Oglethorpe Power (30%), MEAG Power (22.7%) and Dalton city (1.6%) - when Westinghouse received the order for the units in 2008.

The new agreement fixes Toshiba's maximum obligation under the parental guarantee to \$3.68

billion, with payments to be made in instalments during the period from October 2017 to January 2021. According to Toshiba, the agreement specifies that the agreed maximum cannot be subjected to any further increases or claims by the plant's owners "even in the event of future increases in construction costs".

The maximum amount has already been incorporated into Toshiba's financial outlook for fiscal 2016, announced on 15 May 2016, as part of a JPY980 billion (\$8.9 billion) provision for parent company guarantees and a reserve for losses against loans. It will therefore have no additional impact on Toshiba's financial results, the company said.

If actual construction costs are less than the specified maximum amount, Toshiba will have the right to receive "part of the benefit of the difference" as Westinghouse's creditor.

Toshiba said it was still in negotiations with the owners of the VC Summer plant in South Carolina-Scana Corporation and Santee Cooper - in respect of its parent company guarantee obligations and payment schedule. "Toshiba aims to finalise the total maximum amount of the parent company guarantee for all four nuclear reactors under construction in the US, and will ensure prompt disclosure of information related to this matter as and when it becomes available," it said.

...The new service agreement finalised by Georgia Power and Westinghouse will allow for the transition of project management at Vogtle from Westinghouse to Southern Nuclear and Georgia Power and will take effect after approval of the bankruptcy court it granted, and the rejection of the current engineering, procurement and construction contract by Westinghouse. The conditional agreement, which also requires approval by Westinghouse's board of directors, includes engineering, procurement and licensing

support as well as access to intellectual property needed for the project. Georgia Power president and CEO Paul Bowers said the "positive developments" with Toshiba and Westinghouse allowed momentum to continue at the site during the project management transition process....

Source: World Nuclear News, 12 June 2017.

TAIWAN

Cabinet Reaffirms Goal of Phasing Out Nuclear Power by 2025

The Cabinet reiterated the government's resolve to move away from nuclear power, as it sought to reassure environmentalists who were protesting against the recent reactivation of a reactor at the country's second nuclear power plant.

The government remains committed to the goal of decommissioning the three operational nuclear power plants as scheduled and making Taiwan nuclear-free by 2025, Cabinet

spokesman Hsu Kuo-yung said.

Six months after it was shut down for annual maintenance, the No. 1 reactor at the second nuclear power plant located in New Taipei City resumed operation with the approval of the Atomic Energy Council (AEC).

... Also, Chang Hsin, chief of the AEC's Department of Nuclear Regulation, said the council was expected to give approval later in the day to reactivate the No. 2 reactor at the third nuclear power plant as it had passed AEC inspection. The reactor at the plant in southern Pingtung County was taken offline on April 7 for annual maintenance, which was scheduled to be completed on May 17, but due to accidental damage to a component during the process, the work was delayed.

On June 7, the state-run Taipower applied to the AEC for permission to restart the reactor as the

The Cabinet reiterated the government's resolve to move away from nuclear power, as it sought to reassure environmentalists who were protesting against the recent reactivation of a reactor at the country's second nuclear power plant the government remains committed to the goal of decommissioning the three operational nuclear power plants as scheduled and making Taiwan nuclear-free by 2025.

maintenance and repairs were complete. Taipower spokesman Lin Te-fu said that pending AEC approval, the reactor would resume power generation on June 16.

Source: The China Post, 14 June 2017.

NUCLEAR COOPERATION

INDIA–RUSSIA

India, Russia Sign Pact for 2 Nuclear Power Units, to Cost Rs 50,000 Crore

The fifth and the sixth unit of India's largest nuclear power plant in Tamil Nadu will cost about Rs 50,000 crore to build with half of it being funded by Russia as loan. The project will take seven years to start generating electricity, NPCIL Chairman and Managing Director SK Sharma told PTI.

India and Russia signed an agreement for the two new reactors for the Kudankulam Nuclear Power Plant (KNPP) on the sidelines of the annual summit between Prime Minister Narendra Modi and Russian President Vladimir Putin.... Atomstroyexport, a unit of Russian state nuclear corporation Rosatom, will build the reactors.

"The project will be funded in 70:30 debt-equity ratio (70 per cent debt, 30 per cent equity)," he said. The Russian government will lend India USD 4.2 billion to help cover the construction cost..."At a joint teleconference in October 2016 with Narendra Modi we launched the construction of the plant's third and fourth units. And we reaffirmed our intention to build in India at least 12 Russian-designed energy units, which will make a large contribution to the development of India's nuclear industry," he said.

The fifth and the sixth unit of India's largest nuclear power plant in Tamil Nadu will cost about Rs 50,000 crore to build with half of it being funded by Russia as loan. The project will take seven years to start generating electricity.

Construction of plant's third and fourth units was launched last year and will cost Rs 39,747 crore. While the cost of generating power from first two units is reported at Rs 4.29 per unit, the cost from 3 and 4 is likely to be significantly higher than that. Units 3 and 4 of the Kudankulam plant are expected to be commissioned by 2022-23.

...Construction on the plant began on March 31, 2002 and Unit 1 was synchronised with the southern power grid in October 2013. The second unit started generating electricity in August last year. The original cost of the two units was Rs 13,171 crore, but it was later revised to Rs 17,270 crore. Russia advanced a credit of Rs 6,416 crore for construction of the two units. Construction of plant's third and fourth units was launched last year and will cost Rs 39,747 crore. While the cost of generating power from first two units is reported at Rs 4.29 per unit, the cost from 3 and 4 is likely to be significantly higher than that. Units 3 and 4 of the Kudankulam plant are expected to be commissioned by 2022-23.

Source: Hindustan Times, 03 June 2017.

JAPAN–UK

Hitachi Stresses Joint Responsibility of UK Project

Hitachi has stressed the importance to its UK nuclear business of a "one team" project management structure based on collaboration between three companies. Hitachi, which acquired Horizon Nuclear Power in 2012 as a wholly owned subsidiary, is partnering with US and Japanese engineering firms Bechtel and JGC.

Horizon aims to provide at least 5.4 GWe of new capacity across two sites - Wylfa Newydd, which is on the Isle of Anglesey, and Oldbury-on-Severn, in South Gloucestershire - by deploying Hitachi-GE UK Advanced Boiling Water Reactors (ABWRs). Hitachi plans to make a final investment decision on the project in 2019 and to start operation of the first unit in the first half of the 2020s. Horizon announced in May 2016 it had appointed a joint

venture responsible for construction of the Wylfa Newydd plant. The newly created company, Menter Newydd, is a joint venture of Hitachi Nuclear Energy Europe, Bechtel Management Company and JGC Corporation (UK).

...In a presentation at the 8 June 2017 event, Hitachi said it aims to “make good progress” with the project and “enhance its business value and minimise risks by building the strongest partnerships”. It is creating an environment where ‘on budget’ and ‘on schedule’ are prioritised, with the three companies jointly responsible for the project’s implementation.

In addition to Hitachi’s joint venture with Bechtel and JGC, Horizon announced in April that Exelon Generation and Japan Atomic Power Company had formed a joint venture company - JExel Nuclear - “to leverage Exelon’s expertise in operational excellence and safety among international operators using Japanese reactor technologies”.

The Japanese and UK governments signed a Memorandum of Cooperation across a full range of civil nuclear activities in December 2016 and both governments have expressed their support for the Horizon project, Hitachi said. The project will need the “provision of revenue stability” under the UK government’s Contracts-for-Difference scheme, it added, with “promotion of the operation and maintenance business” to follow once the plant becomes operational. The fourth and final step of the Generic Design Assessment of the UK ABWR is underway and the process is expected to be completed by the end of 2017 year as planned, Hitachi said. A site licence application was submitted to the Office for Nuclear Regulation in March, while the third and final public consultation on the project is to

The Japanese and UK governments signed a Memorandum of Cooperation across a full range of civil nuclear activities in December 2016 and both governments have expressed their support for the Horizon project, Hitachi said. The project will need the “provision of revenue stability” under the UK government’s Contracts-for-Difference scheme.

Hitachi also announced on 8 June that it aims to achieve a total of ¥280 billion in nuclear power revenue - ¥210 billion in Japan and ¥70 billion from overseas - in the fiscal year that begins in April 2020. That compares with the target for the current fiscal year that started in April of ¥196 billion and for the next fiscal year of ¥200 billion.

be completed on 22 June 2017..

According to Nikkei, Hitachi will “curtail its financial risk” in the construction of the two nuclear power plants in the UK “by divesting itself of the local subsidiary that will build and operate them”. If Hitachi fails to attract new

investors to Horizon before construction starts in 2019, it will be “forced to bear practically all the financial risk of the project” and will “suspend its plans for the ¥2 trillion (\$18.1 billion) project”, Nikkei said.

Hitachi also announced on 8 June that it aims to achieve a total of ¥280 billion in nuclear power revenue - ¥210 billion in Japan and ¥70 billion from overseas - in the fiscal year that begins in April 2020. That compares with the target for the current fiscal year that started in April of ¥196 billion and for the next fiscal year of ¥200 billion...

Source: World Nuclear News, 12 June 2017.

NUCLEAR PROLIFERATION

NORTH KOREA

China Could Stop North Korea’s Nuclear Threat in A Heartbeat without Firing a Shot

After a provocative North Korean missile launch in 2003, China completely cut off its supply of oil to North Korea for three days, and in no time the Kim regime caved to international demands and sat down for Six Party Talks on nuclear disarmament. Chinese President Xi Jinping’s has assured US President Donald Trump that China had limited influence over North Korea, but that’s only half true.

It’s true that diplomatic relations between the two are weak. Xi has never visited Kim Jong Un in

Pyongyang and Kim has never been to Beijing. High ranking officials with ties to China in North Korea have been executed by Kim, sometimes with packs of dogs, sometimes with anti-aircraft guns.

But Gordon Chang, author of "The Coming Collapse of China," wrote in The Cipher Brief that 90% of North Korea's trade is done with China, including 90% of its oil and sometimes 100% of its aviation fuel. "China can disarm North Korea in the blink of an eye," he wrote. And China can disarm North Korea by crippling its economy - but at a huge cost to the civilians of North Korea.

Sanctions on North Korea do not affect regular trade. Although the UN takes very seriously the prospect of an aggressive, nuclear-armed North Korea, economic warfare in the form of too-harsh sanctions certainly would wither and kill the poor, ordinary people of North Korea. Additionally, China pressing North Korea to the point of regime collapse would contradict its interests, as Beijing doesn't want to face a strong, democratic, unified Korea on its borders that could play host to US military installations.

...But North Korea, with it's incessant nuclear provocations and near-weekly missile tests, functions as a giant bullseye to the US, though any military confrontation runs a high risk of going nuclear and killing hundreds of thousands, if not more. ...So as North Korea progresses towards a nuclear missile that can strike the US, China must decide how hard it's willing to press the Kim regime, while considering its increasingly-strained relationship with the US for supporting a rogue regime.

Source: <http://www.businessinsider.in/>, 09 June 2017.

NUCLEAR SECURITY

GENERAL

New Agreements Reinforce Partnerships in Technical Cooperation

The 15 agreements signed during the International Conference on the IAEA Technical Cooperation Programme are testimony to the importance of partnerships in the pursuit of development objectives, said IAEA Deputy Director General Dazhu Yang.

"Looking to the future, Sustainable Development Goal 17 recognizes the role of science, technology and innovation as essential enablers for development, and emphasizes the importance of partnerships as a critical means of implementation." ...The cross-border nature of many of the development goals of Member States was highlighted during the conference. Some of the issues that IAEA technical cooperation projects work

to address do not stop at national borders, such as aquifer conservation and communicable disease containment. In light of this, a number of panelists encouraged future projects to further incorporate outreach and collaboration with neighbouring nations.

... Practical Arrangements were signed with the Caribbean Public Health Agency (CARPHA), the Pacific Community (SPC), and the Pan American Health Organization (PAHO). The agreement with CARPHA provides a framework for joint work on the use of nuclear science to prevent disease and promote and protect health. It calls for collaboration in the application of radiation medicine, the application of stable isotopes in nutrition, the use of insect pest management practices with a radiation component, increased collaboration in environmental monitoring and the implementation of radiation protection standards.

The agreement with SPC, the principal scientific

Although the UN takes very seriously the prospect of an aggressive, nuclear-armed North Korea, economic warfare in the form of too-harsh sanctions certainly would wither and kill the poor, ordinary people of North Korea. Additionally, China pressing North Korea to the point of regime collapse would contradict its interests, as Beijing doesn't want to face a strong, democratic, unified Korea on its borders that could play host to US military installations.

and technical organization in the Pacific region, aims to increase collaboration in the promotion of science, technical expertise, research and innovation to address development challenges and support economic and social progress. The agreement will promote dialogue of development trends and challenges, particularly in the areas of water and the environment, energy, agriculture, food and nutrition security, and non-communicable diseases.

The agreement with PAHO will support cooperation in fields that include quality assurance in radiation medicine, radiological safety, cancer control, non-communicable diseases and nutrition, and the development of health personnel in Latin America and the Caribbean.

Representatives of eleven countries (Benin, the Central African Republic, Cuba, Honduras, Iraq, Jordan, Kenya, the Philippines, Saudi Arabia, Uruguay and Vanuatu) signed a Country Programme Framework with the IAEA, identifying priority areas where the transfer of nuclear technology and technical cooperation resources will be directed to support national development goals and priorities.

...An agreement between the IAEA and the Government of Thailand will facilitate the organization and hosting of IAEA activities, such as training courses and workshops in Thailand. More than 1160 participants, including Heads of State and Government and other high level officials, from 160 countries and 27 organizations and entities attended the Conference. It was the first international conference held on the IAEA Technical Cooperation Programme and took place from 30 May to 1 June 2017.

Source: <https://www.iaea.org/>, 02 June 2017.

NUCLEAR SAFETY

BELGIUM

New Cracks Found in Tihange 2 Belgian Nuclear Power Plant

Seventy new micro-cracks have been discovered in the high-pressure boiler at the aging Tihange 2 nuclear reactor in Belgium, since the last inspection in 2014. Experts using ultrasonic technology found the new cracks after positioning the camera in a different direction, according to a response from Belgian Interior Minister Jan Jambon to a parliamentary question from the Green party.

Representatives of eleven countries (Benin, the Central African Republic, Cuba, Honduras, Iraq, Jordan, Kenya, the Philippines, Saudi Arabia, Uruguay and Vanuatu) signed a Country Programme Framework with the IAEA, identifying priority areas where the transfer of nuclear technology and technical cooperation resources will be directed to support national development goals and priorities.

The security of the Tihange nuclear power plant is not in doubt and it will continue to operate, Jambon said. The more-than-40-year-old nuclear power plant consists of three reactors, which have been plagued by several shut downs and incidents due to maintenance and safety concerns. The original life span of the plant was 30 years. The Belgian newspaper Belga

reported that as of 2015, nuclear inspectors had found 3,149 points of damage to the Tihange 2 reactor. With the latest inspection, that number has risen 2.2 percent to 3,219, according to the organization Nuclear Stop.

The Belgian newspaper Belga reported that as of 2015, nuclear inspectors had found 3,149 points of damage to the Tihange 2 reactor. With the latest inspection, that number has risen 2.2 percent to 3,219, according to the organization Nuclear Stop.

Previously unknown micro-cracks were also discovered at the Doel 3 nuclear reactor near Antwerp during a control check in November. Authorities said the security of the reactor was not in question. Belgium relies on nuclear power for about 39 percent of its electricity supply, forcing it to extend the life of existing nuclear reactors as it builds up other energy sources.

Source: <http://www.dw.com/en/>, 12 June 2017.

NUCLEAR WASTE MANAGEMENT

CANADA

License Renewal for Canadian Waste Facility

The Canadian Nuclear Safety Commission (CNSC) has renewed the operating licence for Ontario Power Generation's (OPG) Western Waste Management Facility (WWMF) until 31 May 2027. Meanwhile, OPG has responded to requests for information from the federal government about its proposed Deep Geologic Repository for the permanent disposal of low- and intermediate-level radioactive waste from its nuclear power plants.

The WWMF, located on the shore of Lake Huron, is responsible for the safe handling, management and interim storage of low- and intermediate-level radioactive waste from the Bruce A and B reactors and from OPG's Pickering and Darlington nuclear power plants. It also manages used fuel from the Bruce plants and refurbishment waste from Bruce A. The facility, in the municipality of Kincardine, is owned and operated by OPG and has been in operation since 1974.

The CNSC considered submissions from OPG and 18 intervenors, as well as recommendations from its own staff, in making its decision following a public hearing held in April. The renewed licence authorises the construction of new facilities to provide additional storage capacity and processing facilities. These include buildings for the storage of low- and intermediate-level waste, in-ground storage containers for intermediate-level waste, in-ground containers for heat exchangers and buildings for dry storage of used nuclear fuel. Operation of the new facilities is subject to CNSC acceptance of OPG's commissioning report.

While the WWMF provides interim storage facilities, OPG plans to build a permanent disposal facility - the Deep Geologic Repository, or DGR - on the Bruce site. The Canadian Environment Assessment Agency (CEAA) is in the process of reviewing OPG's proposal. OPG has now submitted its responses to 23 information requests from the Canadian Environment Assessment Agency (CEAA) about the proposed Deep Geologic Repository, the company said on 29 May 2017....

The Canadian Environment Assessment Agency (CEAA) is in the process of reviewing OPG's proposal. OPG has now submitted its responses to 23 information requests from the Canadian Environment Assessment Agency (CEAA) about the proposed Deep Geologic Repository.

The CEAA will report its recommendations to Canada's minister of environment and climate change, who is expected to decide this year whether to approve the environmental assessment.

Source: World Nuclear News, 01 June 2017.

LITHUANIA

Lithuania Starts Hot Tests at Solid Waste Facility

The Ignalina Nuclear Power Plant (INPP) in Lithuania has taken another step forward in the decommissioning process with the start today of hot trials, using radioactive materials, of the new Solid Radioactive Waste Management and Storage

Facility. The milestone was announced by the European Bank for Reconstruction and Development.

The facility is a key element of the decommissioning of INPP and financed through the Ignalina International Decommissioning Support Fund (IIDSF). Established in 2001 and managed by the EBRD, the fund has

provided more than €830 million (\$928 million) to date for the implementation of key decommissioning projects and the development of Lithuania's energy sector.

Known as the SWMSF B2/3/4 Project, the facility will provide INPP with the means to retrieve, characterise, sort, transport, pack and store the short- and long-lived radioactive solid waste accumulated during the operation of the Ignalina plant as well as waste being generated during the decommissioning process. It was built by Germany's Nukem Technologies at a cost of about €200 million.

...The EBRD-managed IIDSF is supported by the European Union, which has provided 96% of the contributions. Other contributors include Austria, Belgium, Denmark, Finland, France, Germany, Luxembourg, Netherlands, Norway, Poland, Spain, Sweden, Switzerland and the UK.

Lithuanian State Nuclear Power Safety Inspectorate, Vatesi, said on 5 May it had issued a permit for the start of commercial operation of the country's new interim used fuel storage facility. The announcement followed State Enterprise INPP's successful completion of hot tests with ten new design casks. This facility, known as the ISFSF B1 Project, is at the plant site in Visaginas

municipality. Used fuel will be stored in specially designed Constor RBMK1500/M2 casks that will each weigh 118 tonnes when fully loaded. It is expected that about 190 containers with 17,000 used fuel rods will be stored in the facility for up to 50 years.

Lithuania agreed to shut down Ignalina units 1 and 2 as a condition of its accession to the European Union. Unit 1 was shut down in December 2004 and unit 2 in December 2009.

Source: World Nuclear News, 09 June 2017.

SWEDEN

Planning Begins for Swedish Encapsulation Plant

Systems design and safety analysis work has begun for a planned encapsulation plant as part of Swedish waste and fuel management company Svensk Kärnbränslehantering AB's (SKB) plans for managing the country's radioactive waste.

The encapsulation plant - known as Clink - is to be built next to SKB's existing interim storage facility, Clab, at Simpevarp, which is 25 kilometres north of Oskarshamn. The two plants will be operated together as an integrated facility. Swedish nuclear regulator SSM last year expressed a positive opinion of the plans, which are now undergoing licensing reviews.

Construction of Clink, where used nuclear fuel will be encapsulated in copper capsules - could begin in the early 2020s if all SKB's permit applications are approved, SKB CEO Eva Halldén said.

SKB has now commissioned three suppliers - Babcock Noell GmbH (BNG), Sweco Industry and Vattenfall AB - to develop the system engineering and safety work for the encapsulation plant. These will form the

basis for further investigations by SSM. BNG is to work on the encapsulation process, with Sweco working on construction and technical systems, safety and security related systems and safety analysis. Vattenfall will prepare the preliminary safety report. The contracts are worth SEK400 million (\$46 million) and the project will take three years.

Sweco said its contract to finalise the plant's plans, design and technical building services and safety, control and power supply systems could be worth over SEK200 million subject to SKB obtaining the necessary authorisations. The Swedish engineering design company will also create system-level requirements and solutions, a preliminary safety report, budget calculations, procurement documentation for suppliers and contractors, and detailed design.

Source: World Nuclear News, 12 June 2017.

Used fuel will be stored in specially designed Constor RBMK1500/M2 casks that will each weigh 118 tonnes when fully loaded. It is expected that about 190 containers with 17,000 used fuel rods will be stored in the facility for up to 50 years.



Centre for Air Power Studies

The Centre for Air Power Studies (CAPS) is an independent, non-profit think tank that undertakes and promotes policy-related research, study and discussion on defence and military issues, trends and developments in air power and space for civil and military purposes, as also related issues of national security. The Centre is headed by Air Marshal Vinod Patney, SYSM PVSM AVSM VrC (Retd).

Centre for Air Power Studies

P-284

Arjan Path, Subroto Park,

New Delhi - 110010

Tel.: +91 - 11 - 25699131/32

Fax: +91 - 11 - 25682533

Email: capsnetdroff@gmail.com

Website: www.capsindia.org

Edited by: Director General, CAPS

Editorial Team: Dr. Sitakanta Mishra, Hina Pandey, Arjun Subramanian P, Chandra Rekha, Dr. Poonam Mann

Composed by: CAPS

Disclaimer: Information and data included in this newsletter is for educational non-commercial purposes only and has been carefully adapted, excerpted or edited from sources deemed reliable and accurate at the time of preparation. The Centre does not accept any liability for error therein. All copyrighted material belongs to respective owners and is provided only for purposes of wider dissemination.