



A FORTNIGHTLY NEWSLETTER ON NUCLEAR DEFENCE, ENERGY AND PROLIFERATION FROM
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OPINION – Rakesh Sood

Be Bold at the Nuclear Summit

... Prime Minister Narendra Modi [is] in Washington, DC for the NSS, the fourth and the last in a series that was launched by US President Barack Obama in Washington in 2010. Follow-on summits have been held in Seoul and The Hague in 2012 and 2014, respectively. India has played an active role in the process with Prime Minister Manmohan Singh attending the first two summits. A voluntary contribution of a million dollars to the Nuclear Security Fund has been made. More significant has been the initiative for establishment of a GCNEP, which has already conducted more than a dozen national and international courses in relevant fields.

A Natural Role: India's profile in the NSS process is natural given our concerns about global terrorism and the growing threat posed by terrorists seeking to acquire weapons of mass destruction. Since 2002, India has been introducing a resolution on terrorism and weapons of mass destruction in the UNGA, adopted by consensus every year. It laid the groundwork for the legally binding UNSCR 1540 adopted in 2005. Therefore when President Obama highlighted this threat in his famous Prague speech in 2009 and called upon the international community to ensure the

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securing of all vulnerable nuclear materials within four years, a positive Indian response was natural.

There is another reason too. Nuclear power today constitutes a small part in India's electricity generation, but this is due to change. Currently, the twenty nuclear power plants in operation have a capacity of 4.8 GW, out of a total installed power generation capacity of 240 GW. A quarter of India's population does not have access to electricity and energy poverty has been identified as a major obstacle to economic growth. The Integrated Energy Policy visualises the installed capacity rising to 1200 GW by 2035, with nuclear power

contributing 60 GW. This will be 5 per cent, but it is critical in terms of reducing fossil fuel dependence and mitigating the carbon footprint. Any breach in nuclear safety or security that could undermine public confidence in nuclear energy would have grave repercussions on India's long-term energy planning.

For India, therefore, nuclear security is not a new objective, but has always been a priority along with nuclear safety.

Threat of Nuclear Terrorism: With the emergence of global jihadi threats like al-Qaeda and the Islamic State, nuclear security has taken on additional urgency. Three potential nuclear terrorist threats have been identified. First is the threat of terrorists making or acquiring a nuclear bomb and exploding it; second is the possibility of sabotaging an existing nuclear facility to create an accident; and finally, third is the possibility of use of radioactive material to create a 'dirty bomb' or a radiological dispersal device.

The last is often considered the easiest for a suicide squad, given the fact that there are millions of medical devices and other equipment that contain small amounts of radioactive substances (cobalt-60, americium-241, caesium-137) which are widely distributed and do not have the kind of security normally associated with nuclear reactor facilities. Irrespective of the number of fatalities, a dirty bomb can create widespread panic and cost billions in cleaning-up operations. Insider support by a radicalised sympathiser could render a nuclear facility vulnerable to sabotage. It is well established that in the past al-Qaeda has not only considered and pursued all the three options, but also had access to nuclear expertise. Al-Qaeda may have been weakened today but the IS is also known to harbour similar ambitions.

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role because nuclear security is neither nuclear disarmament nor non-proliferation, nor is it nuclear safety. This leads some to downplay its significance or suspect that it is a ploy to constrain India's nuclear programme. Neither perception is correct; in fact, as a responsible nuclear weapon state, it is incumbent on India to ensure that all

nuclear materials and facilities (both civilian and military) are subjected to the highest levels of security. Simply put, it would cover preventing unauthorised access to nuclear materials, facilities and technologies; timely detection, were a breach to take place; and finally, effective responses to such acts of terror and sabotage.

Barack Obama's Initiative: President Obama's initiative relied heavily on his personal outreach to other leaders. ... Two countries not invited are Iran and DPRK, and this time President Putin will also stay away though this has more to do with differences over Ukraine than over nuclear security. Rather than attempt to negotiate a new treaty, the NSS process has focussed on urging

The biggest achievement has been that the somewhat technical subject of nuclear security has received sustained high-level political attention. However the major drawback of this process is that there is no legally binding outcome at the end of six years.

states to tighten national laws, rules and capabilities by using best practices and international cooperation. Establishing global centres of excellence (like the one in India), launching the Nuclear Security Fund, and expanding the activities of

the IAEA's Nuclear Security Training and Support Centres are some of the outcomes.

In concrete terms, about 15 MT of HEU have been down-blended to low-enriched uranium, a number of reactors using HEU have either been shut down or switched their fuel, 12 countries have given up all HEU, and fuel repatriation to source countries has been accelerated. The biggest achievement has been that the somewhat technical subject of nuclear security has received sustained high-level political attention. However the major drawback of this process is that there is no legally binding outcome at the end of six years.

The big subject for discussion in Washington will be about sustaining the process and political engagement. Since there is no new organisation being set up, three existing institutions are expected to adopt specific action plans. The UN will sustain the political momentum and continue to monitor the implementation of UNSCR 1540; the IAEA will strengthen its database of cases of illicit trafficking of nuclear materials and a Contact Group will be set up in Vienna for follow-up which would include a ministerial-level conference, possibly every two years; and Interpol will act as the nodal agency to deter nuclear smuggling. In addition, the US and Russia will continue to co-chair the GICNT, which is a voluntary grouping of 86 states with working groups on nuclear detection, forensics and mitigation. A G-8 Global Partnership to combat the spread of weapons of mass destruction has been another initiative but clearly what G-8 or GICNT can achieve will depend on political ups and downs between major powers.

An innovative diplomatic practice was the use of 'house gifts'; in 2010, leaders were encouraged to announce measures to address nuclear security threats at a national or wider level. The concept evolved further to 'gift baskets', or joint undertakings by a group of like-minded countries that others were invited to join. Some gifts involved new commitments but some were recycled pledges.

Prime Minister Modi has carried forward the nuclear diplomatic agenda that was begun in 1998: to establish India as a responsible weapon state and ensure its participation in civilian international nuclear trade and cooperation. Shortly after the NDA came to power in 2014, India completed its procedures for adherence to IAEA's Amended Protocol, and last month announced ratification of the Convention on Supplementary Compensation for Nuclear Damage which had been part of the understanding reached on nuclear liability issues during President Obama's visit in

January 2015.

Mr. Modi's 'House Gift': Given that Prime Minister Modi [is] attending the NSS for the first time, it is likely that he will carry a 'house gift' for his 'good friend Barack's farewell diplomatic banquet. There is merit in adhering to undertakings relating to the 'Centres of Excellence' and tightening measures to prevent nuclear smuggling. An additional financial contribution to the Fund to be disbursed over a period of time, subject to defined

benchmarks being met, is worth considering. Since nuclear weapons and nuclear technology are here to stay, we should call for shifting the focus from insecure materials and facilities to research in proliferation-resistant technologies. The Indian Centre of Excellence could take the lead in this and encourage work on new

reactor designs and use of the closed fuel cycle. Before 1998, when India would be seeking to safeguard its 'nuclear option', India's nuclear diplomacy had to be more complicated and cautious; today, given the distance travelled, Prime Minister Modi is well placed to pursue his nuclear diplomacy with a far greater sense of confidence and purpose.

Source: The Hindu, March 25, 2016.

OPINION – Manoj Joshi

India Needs to Start Thinking Like a Nuclear Nation

The chances are remote. But that was not just the Air Force speaking, but the considered view of the Government of India framed in an operational directive given by the defence minister to the three services in 2009. It urges them to be ready for a two-front war, never mind that the services have never in the past two decades been resourced to fight even one short war with one adversary. There are several issues here. First, is the question of assessing the nature of threats to India's security. Surely, with a million plus troops in its Army, a

First, is the question of assessing the nature of threats to India's security. Surely, with a million plus troops in its Army, a 600+ fleet of combat aircraft and a powerful navy – India is not exactly a push-over, even for a Sino-Pak combination. Second, the two-front scenario has been the proverbial nightmare that India has confronted since the mid-1960s.

600+ fleet of combat aircraft and a powerful navy – India is not exactly a push-over, even for a Sino-Pak combination. Second, the two-front scenario has been the proverbial nightmare that India has confronted since the mid-1960s.

It probably came closest to fruition in the September 1965 India-Pakistan war when China issued an ultimatum to India to cease fire, and also moved some forces in the Sikkim area to aid beleaguered Pakistan.

Our Soviet alliance checked China in the 1971 war, and there were never any serious indications that Beijing would indeed get into the fight, despite Henry Kissinger egging-on China to attack India. During the Kargil war when Pakistan sought Chinese help even the rhetoric was absent, and Beijing politely told Pakistan to get Washington to pull its chestnuts out of the fire.

Third, is the more serious issue of nuclear weapons. Most reasonable people will assume that a state known to have nuclear weapons is likely to use them only in the face of mortal danger. Even if India shot off just 10 nuclear weapons, they would be enough to destroy two major cities and kill tens of millions of people in Pakistan or China and, of course, the other way around as well. Which leader would contemplate such an outcome? The Chinese are much more focused on this issue and believe that the chances of all-out war are remote. They prepare their forces to win what they call “informationised local wars”, whether on the seas or the land.

India has been singularly unable to adjust its military thinking to the fact that it also possesses nuclear weapons. This is because politicians have decreed that nuclear weapons are not really weapons, they are political instruments meant to be used only for retaliation, or to prevent nuclear

blackmail. So, while the weapons delivery systems are embedded in the military, their command and control is entirely civilian. Most military personnel do not know anything about India’s nuclear

capabilities and act on the belief that their job is to fight a conventional war, while the government of the day will hopefully come through if it goes nuclear. While the civilians must, indeed, command the nuclear forces, they must understand that they are, in

the ultimate analysis, weapons, resting at the very top of the escalatory ladder. Militaries may not control the employment of such weapons, but they should be fully cognisant about their use and integrate them in their planning scenarios.

One consequence of mentally separating nuclear and conventional weapons is that the outlook of the Indian military has not changed. So, it still sees itself conducting World War II like “campaigns” against adversaries. The Army continues to hold a large fleet of tanks in its armoury, even though

the plans that were made for their use have been shelved because they will trip Pakistan’s red lines. India need not unilaterally disarm, but it could consider a verifiable reduction of the most aggressive land weapons system with Pakistan. Besides enhancing stability in India-Pakistan

relations, the money saved could be utilised to enhance the mobility and firepower of our forces facing China. The Modi government has a uni-dimensional focus on modernising the equipment of the military, perhaps it should provide some leadership in modernising their organisation and strategy. And, in the meanwhile, initiate a conversation with China and Pakistan about nuclear weapons and their dangers.

Source: <http://www.orfonline.org/>, March 14, 2016.

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OPINION – DR Frank O'Donnell

Three Questions for Indian Nuclear Policy

India's nuclear forces are growing in diversity and technical capability. Unprecedented new nuclear posture options are being placed in the hands of Indian defence planners. India today stands ready to field the first of an indigenous fleet of nuclear-armed submarines; ICBM-range ballistic missiles; and a new generation of short-range ballistic missiles. The triad of nuclear forces deliverable from land, air and sea that was first envisioned in India's 1999 draft nuclear doctrine is therefore finally coming into operational view. With a growing range of technical choices for how it wishes to structure its nuclear force, India must soon select from among these its preferred posture.

This notable technical progress coincides with a strategic environment that is growingly complex. China's defence outlook is increasingly assertive, and it is fielding a new generation of SSBNs and restructuring its nuclear force governance in order to strengthen deterrence. Pakistan is estimated to

have one of the fastest-growing nuclear arsenals in the world and is developing 60km-range tactical nuclear missiles in order to immediately threaten nuclear consequences at any level of future conventional conflict with India. Combined with the new technical force options available to India, these shifts in the strategic environment create conditions that merit a review of India's nuclear doctrine and posture. Some factors that should be integrated into this review can be summarised into three questions.

What role should India's nuclear force play in deterring new threats in the land domain?

Since 2003, India has articulated a no-first-use nuclear doctrine, but one promises massive

retaliation to any adversary nuclear attack. Indian strategists have been frustrated by the ability of Pakistan conventional forces and by militant groups operating from Pakistan, undeterred by Indian nuclear weapons, to launch sub-conventional and limited conventional attacks. Slow Indian military mobilisation in reaction to these attacks have weakened the potential Indian response. Propelled by these frustrations, the Indian Army developed a "Cold Start" concept in 2004. This concept intends to quickly mobilise and launch integrated battle groups to seize and hold limited tracts of Pakistan territory within 72 to 96 hours. While the Army and Indian government have denied that the concept represents actual military doctrine, recent Army exercises involve manoeuvres similar to Cold Start thinking.

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Pakistan announced the development of a 60km-range "Nasr" nuclear missile in 2011, and claims that this new nuclear capability is intended to deter any Indian Cold Start-like operation. Combined with a new nuclear concept of "full spectrum deterrence", Pakistan now intends to threaten immediate nuclear

escalation of almost every level of potential conventional conflict with India. India simultaneously faces new land-based threats from China. China's nuclear and conventional military technology is at least one generation ahead of that of India. Beijing has long held the ability to hold the entirety of the Indian mainland at nuclear risk.

However, recent developments include the restructuring of Chinese nuclear forces under a new Rocket Force, strengthening their governance; heavy investment in ballistic missiles, presenting difficulty for Indian defence planners to distinguish between their potential nuclear or conventional missions; and logistics advancements close to the disputed border with

India. While India struggles to raise enough forces along the border to generate an effective conventional deterrent, concerns about perceived Chinese dark intentions and conventional superiority has led to calls to end India's no-first-use policy.

How should India manage regional seaborne nuclear deterrence?

India, China and Pakistan are all currently working on fielding nuclear-armed naval forces. India's first indigenous SSBN, the Arihant, was reported as ready for service on February 23. China is developing a Jin-class SSBN fleet, while Pakistan agreed in October to purchase 8 diesel-electric submarines from China. The latter boats are widely viewed as intended to be assigned nuclear missions in future. These three states have little operational experience of managing seaborne nuclear forces, and will naturally gain this experience partly through incidents that are learned from.

These nuclear-armed vessels join already fierce conventional naval competition. Pakistan is focusing particularly on anti-access/area denial capabilities, including submarines, fast missile boats, and anti-ship ballistic missiles, in order to challenge India's carrier-based naval forces. Chinese submarines were suspected to be exploring waters close to a major Indian military command in February, and have previously docked in Colombo, Gwadar and Karachi. With virtually no maritime dialogue among these states and little shared understanding of naval and nuclear intentions, the risk grows of misperceiving an adversary nuclear-armed vessel as a conventional boat, with inadvertent escalatory implications.

How should a nuclear doctrinal review be conducted?

Calls for a review of Indian nuclear doctrine are growing, and have recently been made by a retired External Affairs Minister, a former SFC Chief, a retired Chairman of the Chiefs of Staff, and a former National Security

Advisor among others. The election manifesto of the BJP government, elected in 2014, appeared to accede to this pressure, promising to "revise and update" the doctrine "to make it relevant to challenges of current times". However, this prompted robust international concerns that any doctrinal revision could end the no-first-use policy and generally assign nuclear weapons a greater role in Indian defence than at present. This furore erupted as India continues to seek acceptance as a "responsible nuclear power" as a full member of global nuclear order institutions, such as the NSG and MTCR.

Facing these pressures, newly elected PM Modi declared in August 2014 that "we are not taking any initiative for a review of our nuclear doctrine." However, this still leaves unaddressed the issue that the doctrine has not been publicly reviewed since 2003 in light of the evolving challenges detailed above. With Indian nuclear force advancements one of the few bright spots of

general Indian military modernisation, there is a worrying tendency for Indian analysts to occasionally suggest that new nuclear platforms have a relevance to conventional challenges. This occurs due to the absence of a recent iteration

of nuclear doctrine that addresses the new strategic environment and clearly structures the roles of Indian conventional and nuclear forces within this environment.

Given the pressures against India revising its stand-alone nuclear doctrine, India should instead conduct a broader public official defence review. This review would incorporate assessments of the above strategic challenges and assign conventional and nuclear forces to each challenge as necessary. Crucially, it would reiterate that nuclear forces only obtain credibility as a last-resort tool to safeguard national survival and that other challenges should be met by building and deploying strong conventional defences.

Whether or not this official defence review is conducted, the future of Indian nuclear policy and

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regional stability will depend to a great extent on how New Delhi answers these three questions. Those interested in Asian security should watch closely.

Source: <http://defenceindepth.co/>, March 18, 2016.

OPINION – K.N. Pandita

NSS and South Asia

In his speech in Prague in 2009, President Obama touched on an important subject for the first time. He talked about security against nuclear terror, meaning securing nuclear arsenals against falling in the hands of non-State actors. In 2010, the first meeting of stakeholders (NSS) numbering no fewer than 53, was held in Washington to deliberate and gradually inch towards a consensus formula of how nuclear arsenals could be safeguarded. The fourth and perhaps the final meeting of the NSS, to which India and Pakistan have also been invited, is to be held in Washington 31 March–1 April, 2016. President Putin of Russia has declined to participate.

India and Pakistan, two nuclear countries in South Asia count fairly well in the deliberations and in the decision likely to come out of the final round of talks. In a news briefing in Washington in the third week of October 2015, Pakistan foreign secretary, Chaudhury disclosed for the first time that his country had made low-yield nuclear tactical weapons “for use in the event of a sudden attack by its larger neighbor.” Two days later, PM Sharif met with President Obama. Reports are that they talked about Pakistan’s nuclear programme including Afghanistan and militant groups such as the Haqqani network and Lashkar-e-Tayyiba both on banned organizations list of the US.

Quoting Pervez Hoodbhoy, a nuclear physicist and independent security analyst based in Lahore, BBC reported in a news commentary on October 21, 2015, “The fact that Pakistan was making

small tactical nuclear weapons was clear to the world from the day Pakistan started its missile programme. It meant that Pakistan had developed low – yield nuclear warheads to be delivered by those missiles at short ranges in a battlefield having localized impact, unlike big bombs designed to destroy cities.” Experts say that the 2011 testing of nuclear-capable Nasr missile by Pakistan with a 60 kilometers range was an indication that Pakistan was building an arsenal of tactical nuclear weapons for use in a theater of war.

Hasan Askari Rizvi, a Lahore-based expert on defence and security issues, suspects that Pakistan may have designed even smaller nuclear weapons, capable of being shot from a specially-designed gun. Objectively speaking, battlefield weapons could be more dangerous than larger

weapons because in the event of a conflict, they will need to be spread out, deployed at multiple locations closer to the targets, and would need to be fired at short notice. BBC made the cryptic remark that “evidently, Pakistan has acquired this technology from China and it is not possible to block

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that pipeline.” The question is whether nuclear command and control procedures will always be adequately ensured for all the missile units deployed across the theatre? In addition to this concern, should not western powers and the US in particular take note of the fact that Pakistan developed these weapons despite nuclear-related international sanctions in force since 1998 after it carried out its first nuclear test?

How then is the US reacting to this situation in the context of NSS programme? Let us put it succinctly. Speaking during a hearing on Pakistan convened by House Foreign Affairs Committee, US Special Representative for Af-Pak, Richard Olson said that Obama administration shares the concerns of lawmakers particularly about the development of Pakistan’s nuclear arsenal....

Olson said that the US was concerned a conventional conflict in Southwest Asia could escalate to include nuclear use as well as the increased security challenges that accompany growing stockpiles. He said the US had a very active dialogue at the highest levels with the Pakistanis in which US' concerns were stated. US official circles assert they have urged Pakistan to restrain her nuclear weapons and missile development that might invite increased risk to nuclear safety, security or strategic stability.

On this basis US lawmakers have asked their government to be tough on Islamabad "as it does not seem to be sincere in improving ties with India and has accelerated the pace of arsenals' production." According to the Carnegie Endowment for International Peace, Pakistan could have 350 nuclear warheads in the next decade, becoming the world's third biggest nuclear power, outpacing India, France, China and the UK. Expressing himself forcefully on the subject, Higgins said, "We have to call them (Pakistan) out on this double game they have been playing, not this year, not last year, not five years, but for the past 15 years.... Pakistan, let's be truthful about this, plays a double game. They are our military partner, but they are the protector and the patron of our enemies. US aid to Pakistan economic and military has averaged USD 2 billion a year."

NSS and particularly, the US, have to know that Pakistan with 189 million population — many of them Islamic extremists — has nuclear weapons. To have Islamic extremists with nuclear weapons is a primary goal of al-Qaeda and it would be a major victory for them and the outgrowth of al-Qaeda namely the Islamic State, avers Higgins. Covering the strategic dialogue between high powered- Pakistani delegation led by Adviser Foreign Affairs, Aziz, with their American counterpart in Washington, the Webdesk reported on 9 March that "Aziz insisted that Islamabad

would not accept any unilateral curb on its programme. Any reduction must also apply to India and it must address the conventional imbalance between the two countries." He pointed out that Pakistan did not have the resources to match India's ever-increasing arsenal of conventional weapons and was forced to depend on non-conventional means to defend it." Another important statement which Aziz made on that day was that Pakistan was hosting some Taliban leaders....

It is clear that Pakistan has decided to use nuclear option in case of war with India and that it is not ruling out the possibility of hosting Taliban for whatever purposes. What then should be the foremost agenda of the 4th NSS meeting in Washington on 31 March? Obviously, it should be

Kerry had full-throated praises and encomiums for Pakistani army fighting the "terrorists" in Pakistan's north but not a single word or hint about the terrorist engines on Pakistani soil working against India and Afghanistan. Proliferation of Pakistan's nuclear arsenal and induction of tactical nuclear weapons in that arsenal did not figure in their joint statement.

a detailed review of Pakistan's nuclear arsenal in the backdrop of how Islamabad tries to justify its relentless effort of increasing nuclear stockpile including limited tactical nuclear weapon. However, deeper study in the scenario throws up contradiction in the words and practice of the US. The joint statement

issued by Kerry and Sartaj after the conclusion of strategic dialogue belies the stated intentions of the US. The joint statement is a long eulogy on the "achievements" of Pakistan in meeting the challenge of the terrorists in the northern part of the country. Kerry had full-throated praises and encomiums for Pakistani army fighting the "terrorists" in Pakistan's north but not a single word or hint about the terrorist engines on Pakistani soil working against India and Afghanistan. Proliferation of Pakistan's nuclear arsenal and induction of tactical nuclear weapons in that arsenal did not figure in their joint statement.

Newsdesk of February 29, 2016 referred to a transcript released in Washington showing Secretary Kerry arguing in two congressional hearings that "the US has been working really hard" to advance a rapprochement between Islamabad and India. In one statement he indirectly confirmed

media reports that the US was quietly encouraging the two PMs to hold bilateral talks. How he looks at the stand-off between India and Pakistan, is reflected in his statement that Pakistan has deployed 150,000 to 180,000 troops along the Pak-Afghan border and in case of a conflict with India, Pakistan will have to redeploy bulk of its forces on her eastern front. Thus what Kerry actually wants Pakistan to do is to fight against the Al Qaeda and Taliban outfits on her western front and keep the so-called non-state actors active on her eastern front against India.

The Webdesk of March 9 said that unlike it did with Iran the US does not want Pakistan to shut down its nuclear programme. But it does want Islamabad to reduce the size of its arsenal. During a testimony in the Senate where the bill against sale of 8 F-16 to Pakistan was defeated by 71 to 24 votes, Secretary Kerry passionately defended sale of Lockheed Martin Corp F-16 nuclear fighter jets to Pakistan, saying that US is committed to boosting Pakistan's strategic capabilities in its war against terrorists. In other words Kerry means to say that only the Taliban and Al Qaeda outfits who are fighting against Pakistan in KP region are the terrorists Pakistan should fight against and the scores of other terrorist groups in Pakistan are outside the pale of terrorism. Mumbai attack and recent attack on Pathankot airbase are no terrorist activities for him.

Sale of nuclear powered 8 F-16s apart, the Obama administration in February 2015 asked the US Congress to provide more than \$ 1 billion in aid to Pakistan including a six fold increase in foreign military financing. The budget proposal described Pakistan as a "strategically important nation" and the proposed US assistance "will strengthen its military in fight against extremism, will increase safety of nuclear installations" This lays bare the double speak of the US on much trumpeted NSS to which President Obama has invited PM Modi to participate.

All this notwithstanding, BBC said in its commentary of 9 March that there are suggestions that US may offer Pakistan membership of the NSG, with legitimate access to available research and technology, in return for some curbs on fissile material production in its missile programme. Aziz already reacted by saying that Pakistan will not accept any unilateral curbs unless same are applied to India.

Source: <http://www.indiandefencereview.com/>, March 16, 2016.

OPINION – Leonard Hyman, William Tilles

Five Years After Fukushima: Does Nuclear Power have a Future?

Five years after a devastating earthquake, tsunami and nuclear accident at Fukushima that killed thousands and displaced many more, the Japanese are still cleaning up, people still cannot return to

their homes and, possibly the least important statistic, Tokyo Electric Power's shares sell at one quarter of the pre-accident price. Roughly five years ago, the British government and French utility EDF began a process to build another nuclear power plant at Hinkley Point, an investment still awaiting the approval of

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EDF's board. As odd as it seems, the tragic disaster and botched business deal have a common thread (other than the fact that EDF shares sell at one-third of their 2011 price): the role of government in nuclear power.

Let's start with Fukushima. According to a report in the *Financial Times*, the Fukushima nuclear disaster has cost Japan \$118 billion to date and Tokyo Electric Power's shareholders have picked up only 20 percent of the tab. The government and consumers paid the rest. But Tokyo Electric shares had a market value at time of accident of only one quarter of the expenditures to date. Bankrupting the company wouldn't have raised the cash needed (assuming that anyone

knew the cost then) and the government couldn't have walked away from the problem. Nuclear operators are not required to have the capital to cover the costs of a giant disaster and they do not have the insurance coverage either. That means that the government, taxpayers and specific utility customers have to pay.

Next to Hinkley Point...which is a key component of Cameron's UK energy policy and of Hollande's plan to revive France's nuclear industry. Yet despite being 85 percent state-owned and the world's largest nuclear operator, with 58 plants in France alone, EDF required UK government guarantees for debt and power pricing before it signed on to the project. EDF then sold 33.5 percent of the project to a Chinese state nuclear company and may be seeking additional investors.... Not even a company as large as EDF can take on a project like this alone.

So, this leads to our first point: despite its private enterprise facade, when big bills have to be paid nuclear power becomes a government business. Old facilities, though still fairly expensive to operate, require regulated pricing and new ones can't even be built without government financial and sales guarantees. Both need a shield from liabilities in case of accident, which makes the government and its taxpayers the insurers of last resort. That's it. Normal business concepts don't work here. And the insurance can't get priced into the nuclear cost-benefit analysis. If the insurance bill were correct, it would bankrupt the company in short order.

Nuclear plants require huge amounts of capital. Cost of capital accounts for close to half the price of nuclear power. And risk determines cost of capital. Nuclear plants are risky for numerous reasons—apart from catastrophic failure and meltdown. They take a decade or more to build and construction delays are an inherent part of

the process. Conditions in the market may change drastically from inception of construction to completion. If oil prices move from very high to low over ten years the economic rationale for the plant may vanish. New safety rules, typically appearing after "mishaps", may require expensive plant modifications.

The current market turmoil has created a once in a generation opportunity for savvy energy investors. Whilst the mainstream media prints scare stories of oil prices falling through the floor smart investors are setting up their next winning oil plays. The plants are also too big in relation to the capital of the builders. Any costly extended outage or delay can have a drastic financial impact

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on the owner. Having to fix a plant and buy replacement power for say two years is a billion dollar item. Accident remediation costs might spiral beyond the company's ability to pay. Pro-nuclear governments try to shield the nuclear operator from these risks, if possible. They protect the nuclear operator from lawsuits (reducing insurance costs). They guarantee debt (reducing interest costs). In

the US they tend to pass on unexpected (but prudently incurred) costs to the consumer.

That leads to our second point: these measures do not reduce risk, they just shift it. The risk never goes away. The government and consumer now bear part of it. But consumers do not take out nuclear risk policies with semi-annual payments. They do not see the cost so it doesn't exist for them until the electricity bill goes up. In the same way, government can deny the costs of acting as an insurer of last resort because no line item appears in the budget to cover the costs until an accident happens (that's the way a Congressional staffer explained it once at a meeting on the future of nuclear power).

Does Hinkley Point, needing so much government aid to get off the ground, stand at the end of the

road for big nuclear reactors? ...One path leads to more strained efforts to make a gigantic public works project—with hidden and unknown costs and unspecified and dubious public benefits—look like a commercial business. (Maybe energy prices skyrocket and that private owner of the power plants keeps the benefits and the consumers and taxpayers still pay the fixed costs.) But the strain seems hardly worth the effort, since other means exist to produce low carbon, secure power at similar or lower costs....

The other path leads to nuclear power as a quasi-government project, requiring at least the same public scrutiny as a decision to build a new airport runway or bus station. If the project gets approval, government and consumers will pay a lot and take substantial risks they can't avoid. They deserve a proportional share of the benefits and profits. If the answer is "No More Nukes", once all the information is out, move on to some other solution, until reaching the next fork in the road. Let's face it: The only reason nuclear is in play right now is because of its low carbon footprint and valid concerns about global warming. Nuclear is a solution but we doubt if it's the solution. The next promising fork may lead to small, modular nuclear units that even normal companies can afford to build.

Source: <http://oilprice.com/>, March 15, 2016.

OPINION – Kingston Reif

Cruise Control: Why the US Should not Buy a New Nuclear Air-launched Cruise Missile

The Obama administration's fantastical plan to modernize the Cold War-era nuclear triad of land-based missiles, submarine-launched missiles, and

long-range bombers is prompting an increasingly loud and much-needed debate in Washington and beyond about whether the effort is necessary and sustainable. One of the most controversial pieces of this "all of the above" sustainment approach, which is projected to exceed \$350 billion over the next decade, is the Air Force's proposal to build a new fleet of roughly 1,000 nuclear-capable ALCMs.

The Defense Department and supporters of replacing the nuclear ALCM in Congress and the think tank community argue that building a new missile is necessary to maintain an effective US nuclear deterrent because the current missile is losing its ability to penetrate increasingly sophisticated air and missile defenses. ... Retaining an ALCM option for the bomber leg of the triad provides the president with unique options to control escalation and respond proportionally to a limited nuclear attack. In other words, the new missiles would augment the ability of the US military to fight a nuclear war.

In the halls of the Pentagon, where planners have spent decades justifying nuclear force levels that would make a hoarder seem frugal by comparison, these arguments have taken on an almost religious quality. Yet strip away the magical thinking that permeates so much of US nuclear strategy and the case for a new ALCM is weak: it is redundant, recklessly expensive, and potentially destabilizing.

Background: ALCMs, which are currently carried by the B-52H long-range bomber, are guided missiles that can attack targets at distances outside the range of air defense systems. They

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were developed at a time when America did not have stealth bombers and sought an additional nuclear system with which to deter and impose costs on the Soviet Union. America's lone remaining ALCM variant is the AGM-86B, with a range of 1,500-plus miles. Multiple life-extension programs have kept the missile, which was first fielded in 1982 with a planned service life of 10 years, in service for more than 30 years. The Air Force is planning to retain the missile until 2030. The Air Force is developing the long-range standoff cruise missile (LRSO) to replace the existing ALCM. The new missile will be compatible with existing B-2 and B-52 bombers, as well as with the planned B-21 bomber. The first missile is slated for production by 2026. Including the refurbished warhead that would be carried by the missile, the new weapon system is currently estimated to cost roughly \$20 to \$30 billion to acquire.

The LRSO is not the first time the Pentagon has sought to upgrade its nuclear ALCM capabilities. During the early 1990s, the Air Force developed the Advanced Cruise Missile, describing it as a "subsonic, low-observable air-to-surface strategic nuclear missile with significant range, accuracy, and survivability improvements over the ALCM." However, after spending \$6 billion to buy and operate roughly 450 missiles, the W. Bush administration announced the retirement of the system in 2008 due to major performance and reliability issues. The Pentagon hopes that the same fate that befell the ACM will not befall the LRSO.

The Air Force is developing the long-range standoff cruise missile (LRSO) to replace the existing ALCM. The new missile will be compatible with existing B-2 and B-52 bombers, as well as with the planned B-21 bomber. The first missile is slated for production by 2026. Including the refurbished warhead that would be carried by the missile, the new weapon system is currently estimated to cost roughly \$20 to \$30 billion to acquire.

The service is planning to spend over \$100 billion to build 80 to 100 new stealthy penetrating strategic bombers. One of the top rationales for building a new bomber is to extend America's air dominance in advanced air defense environments. In addition to carrying the LRSO, the new long-range strike bomber (B-21) will be armed with refurbished B61 mod 12 nuclear gravity bombs. Upgrading the B61 is expected to cost roughly \$10 billion. The B-21 is scheduled to remain in service for 50 years while the B61 mod 12 is expected to last 20-30 years.

A Redundant Capability: While supporters of the LRSO cite anticipated improvements in the air defenses of potential adversaries as a reason to develop the new nuclear cruise missile, it is doubtful that any target the missile could hit could not also be destroyed by other US nuclear weapons or conventional cruise missiles. For starters, the LRSO weapon is just one element of the Air Force's plan for the air-based leg of the triad. The service is planning to spend over \$100 billion to build 80 to 100 new stealthy penetrating strategic

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LRSO proponents respond to this point by arguing that future air defenses could jeopardize unchallenged US bomber operations in certain theaters. Though supporters do not claim that the LRSO would be inherently more survivable than the B-21, they claim that the LRSO would increase the number of penetrating targets each bomber presents to an adversary. But in the event the B-21 can't reach a target with a gravity bomb, the weapons associated

with the other two legs of the nuclear triad, SLBMs and ICBMs, can penetrate air defenses and strike targets anywhere on the planet with high

confidence. Indeed, in making the case for the LRSO, supporters often ignore the other two legs of the triad altogether.

As if this wasn't head-scratching enough, some sources say there are significant restrictions on the use of the existing ALCM due to aging and reliability issues. This raises yet another question: If the ALCM only serves a "back-up" role in the current US nuclear war plan, how is it wise to invest \$20 to \$30 billion in a completely new system? Meanwhile, the Air Force is significantly increasing the lethality of its conventionally armed cruise missiles. For example, the service is purchasing thousands of stealthy precision air-to-surface standoff cruise missiles designed to attack targets from outside the range of adversary air defenses. Known as the JASSM-ER, the missile will have a range of roughly 500 miles and be integrated onto the B-1, B-52, B-2, F-15E, and F-16 aircraft — and likely on the F-35 and B-21 as well.

The Air Force is also planning to arm the JASSM-ER with a new computer-killing electronic attack payload. The technology is designed to have an effect similar to an electromagnetic pulse. The Navy's sea-launched Tomahawk cruise missile is also a highly capable and continually improving conventional standoff weapon, and it has an even longer range than the JASSM-ER.

Enhanced Warfighting Capabilities: Given there is nothing unique about the penetrating mission of a nuclear ALCM, devotees of the missile often emphasize other supposed attributes of the system, including that it would come in handy in potential scenarios involving limited nuclear escalation. The idea here is that the weapon system, by virtue of the lower yield of the nuclear warhead it carries, provides the president with the ability to respond proportionally to a smaller-scale nuclear attack by an adversary, thereby enhancing the US ability to deter such attacks from taking place and assuring allies that Washington

will respond decisively to limited use.

Yet US nuclear capabilities would remain highly credible and flexible even without a nuclear ALCM. The arsenal includes other weapons that can produce more "limited" effects, most notably the B61 gravity bomb. More importantly, the notion the use of nuclear weapons can be fine-tuned to carefully control escalation to a full-scale nuclear exchange is very dangerous thinking. It is highly unlikely that an adversary on the receiving end of a US nuclear strike would (or could) distinguish between a large warhead and a small warhead. The fog of war is thick. The fog of nuclear war would be even thicker.

Large or small, nuclear weapons are extremely blunt instruments, both in terms of their destructive power and the taboo associated with the fact they have not been used in 70 years. As Michael Krepon has elegantly put it, the case for the LRSO "demands a fealty to nuclear warfighting concepts that most Americans will be hard-pressed to understand. The nuclear deterrence

business is most persuasive to taxpayers in the abstract; particulars require the suspension of disbelief."

Other arguments in favor of the LRSO are also unconvincing. The Defense and State Departments claim that strategic bombers armed with ALCMs and gravity bombs are more "stabilizing" than the capabilities inherent in the other legs of the triad because the airborne leg provides a nuclear response option that is observable and does not pose the threat of a disarming surprise attack. Yet a B-21 bomber armed with the LRSO will be more difficult to detect than the current B-52/AGM-86B arrangement, and may not always be observable or provide more potential for warning, especially in a crisis. Indeed, some supporters of the LRSO emphasize its utility for achieving tactical surprise in combat.

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The LRSO raises serious questions about stability that have yet to be fully explored. The new missile and its associated refurbished warhead could be vastly more capable than the current ALCM in terms of characteristics such as stealth, speed, range, accuracy, and yield variability. As noted above, the missiles will be deployed on the more advanced B-2 and B-21 bombers. In addition, some sources have said that the Pentagon is envisioning potential uses for the new cruise missile that go beyond “the original mission space” of the ALCM, namely in contingencies involving China.

Furthermore, as highlighted by William Perry, President Clinton’s defense secretary, and Weber, President Obama’s assistant secretary of defense for nuclear, “cruise missiles are a uniquely destabilizing type of weapon” due to the fact that “they can be launched without warning and come in both nuclear and conventional variants.” The possible risk of miscalculation and unintended escalation posed by the LRSO requires far more scrutiny than the blithe assertions from the administration that the missile will be stabilizing.

Indefensible Costs: The case for the LRSO is further undermined when one considers the high budgetary costs and significant opportunity costs. The US is planning to rebuild all three legs of the nuclear triad and their associated warheads at a cost and on a schedule that many military leaders say is unsustainable.... While no one knows for sure what the military budget will look like after the expiration of the Budget Control Act in 2021, it seems unlikely that there will be enough money to fund all of the military’s nuclear and conventional modernization proposals. This will force the US government to choose between the nuclear effort and other military priorities. What’s more, the president and his military advisors have determined that the US can reduce the size of its deployed strategic nuclear arsenal by up to one-third below the 2010 New START levels. Nonetheless, the proposed nuclear spending plans are based on maintaining the New START levels in perpetuity.

The bloated US nuclear arsenal of approximately 4,700 weapons is largely irrelevant to the most

pressing national security challenges the US faces. Retaining an unnecessarily large arsenal and enhancing US nuclear warfighting capabilities will not help Washington address the challenges posed by great powers such as Russia and China. If anything, doing so will exacerbate relations with these countries. The choice is clear: chart a more realistic path for the nuclear arsenal that doesn’t severely constrain the force-sizing options of future presidents and reduces the risk of doing serious damage to conventional capabilities and other national security programs. As an early step in this course correction, the Pentagon should cancel its new cruise missile program and prioritize continued investments in the other legs of the nuclear triad and more relevant and usable non-nuclear capabilities, including longer-range conventional cruise missiles. Doing so would be far more beneficial to US security than spending billions to buy a redundant new nuclear missile unneeded for either deterrence or assurance.

Source: <http://warontherocks.com/>, March 21, 2016.

NUCLEAR STRATEGY

NORTH KOREA

North Korea Nukes Washington in New Video, Threatens South Korea

North Korea released a new propaganda video on 19 March 2016 showing a nuclear strike on Washington and then threatened South Korea with a “merciless military strike” for slandering leader Jong-Un. Pyongyang has been ramping up the bellicose rhetoric and propaganda for weeks, since the launch of annual South Korea-US war games that it views as provocative rehearsals for invasion. Seoul and Washington made the already large-scale joint drills bigger than ever this 2016 in response to the North’s nuclear test in January and long-range rocket launch in February. Menacingly titled “Last Chance”, the video released on 19 March 2016 shows a submarine-launched nuclear missile laying waste to Washington and concludes with the US flag in flames.

Video Wars: The North has issued similar videos in the past, including one in 2013 showing the

White House in a sniper's crosshairs and the Capitol building exploding in a fireball. The latest offering was published on the North's propaganda website *DPRK Today* and shows images from the Korean War, the capture of US spy ship *Pueblo* in 1968 and the first crisis over North Korea's nuclear programme in the early 1990s. North Korea has been pushing to acquire a SLBM capability which would take its nuclear strike threat to a new level, allowing deployment far beyond the Korean peninsula and the potential to retaliate in the event of a nuclear attack.

It has conducted a number of what it says were successful tests of an SLBM, but experts have questioned the claim, suggesting Pyongyang had gone little further than a "pop-up" test from a submerged platform. Tensions always rise on the Korean peninsula during the annual South-US military exercises, but have reached a particularly elevated level this 2016.

That is partly due to the nuclear test and the UN sanctions that followed, but also because of the first-time inclusion in the drills of an operation that envisages strikes to "decapitate" North Korea's top leadership.

Getting Personal: Pyongyang has taken that as a direct threat to leader Jong-Un and responded with increasingly abusive personal attacks on South Korean President Geun-Hye. On 17 March 2016, Kim presided over a huge, long-range artillery drill simulating a strike on Park's office and official residence in Seoul. And on 19 March 2016, the artillery section of the Korean People's Army (KPA) issued an "ultimatum" demanding Park apologise and punish those who formulated the decapitation strategy... The insults have multiplied as Park has hardened her stance with the North in recent months, accusing Kim of leading his country along a path of self-destruction and vowing harsh retaliation to any military provocations.

South Korean activists on 19 March 2016 launched three balloons carrying tens of thousands of anti-Pyongyang leaflets across the border into North Korea. One balloon was strung with a large banner

printed with a Pyongyang-published picture of Jong-Un smiling against the backdrop of a missile being assembled.... The four-minute video romps through the history of US-Korean relations and ends with a digitally manipulated sequence showing a missile surging through clouds, swerving back to Earth and slamming down in front of Washington's Lincoln Memorial. The US Capitol building explodes in the impact and a message flashes up on the screen in Korean: "If US imperialists budge an inch toward us, we will immediately hit them with nuclear (weapons)."

Source: www.hindustantimes.com, March 24, 2016.

BALLISTIC MISSILE DEFENCE

EU-IRAN

No EU Sanctions at This Stage Against Iran Over Ballistic Missile Tests

North Korea has been pushing to acquire a SLBM capability which would take its nuclear strike threat to a new level, allowing deployment far beyond the Korean peninsula and the potential to retaliate in the event of a nuclear attack.

The EU is not considering sanctions against Iran following ballistic missile tests by Tehran, said EU foreign affairs chief Mogherini. Speaking at a press conference after the meeting of EU Foreign

Ministers in Brussels on 14 March 2016, Mogherini said the Iranian tests "are not in violation of the nuclear deal" and the EU is not considering sanctions at this stage. But she warned that the tests could raise tensions in an already volatile region. France had warned on 13 March 2016 that it risked new sanctions as a result of the tests, but Mogherini said that was a matter for the UNSC, which met to discuss the issue on 14 March 2016.

"This is indeed also in our view not a violation of the (nuclear deal) as such," Mogherini said.... "If there is a violation of UNSC resolutions, this should be discussed in the appropriate UN bodies and not necessarily in the EU Foreign Affairs Council," she added. UNSC Resolution 2231, which took effect in January, "calls on" Iran to refrain from ballistic missile activity. But some UNSC members, such as Russia, argue that the

term “call on” isn’t legally binding upon Iran. The US and Israel contend Iran is prohibited from testing ballistic missiles under the resolution and called for the Council to take action. Mogherini said that “we expect Iran to fulfil all its international obligations”.

She added: “The point is we all see this as a major problematic element when it comes to regional relations...this would increase tensions in the Middle East at a moment when tensions are definitely not needed.” The EU foreign affairs chief also announced that she would go to Tehran in April 16 along with several members of the European Commission. Mogherini is also Vice-President of the European Commission. “We will have political consultations, including copnsultations on human rights, but also dialogue and cooperation on trade and investment, on energy, and also civil nuclear cooperation,” she said. Mogherini last visited Iran in July shortly after the P5+1 world powers (Britain, China, France, the US, Russia plus Germany) agreed to lift sanctions in return for Tehran accepting curbs on its nuclear programme. “We will discuss with the ministers on which grounds, on which issues and sectors to re-engage so as to reopen full relations” with Iran, Mogherini said. Under the July nuclear agreement, the lifting of sanctions takes place progressively in line with Tehran meeting its commitments.

Source: <http://ejpress.org/>, March 15, 2016.

NORTH KOREA

North Korea Fires Ballistic Missile into Sea, South Korea’s Defence Ministry Says

North Korea 18 March 2016 fired what appeared to be a medium-range ballistic missile into the sea, just days after leader Jong-Un ordered further nuclear warhead and missile tests, South Korea’s defence ministry said. A ministry spokesman said the missile was launched from Sukchon in the country’s southwest at 5: 55 am (local time) and flew 800 kilometres into the East Sea, also called the Sea of Japan. He did not confirm the type of missile, but South Korea’s Yonhap news agency cited military sources as saying it was a Rodong missile, a scaled-up Scud variant with a maximum

range of around 1,300 kilometres. Military tensions have been soaring on the divided Korean peninsula since the North carried out its fourth nuclear test on January 6, followed in February by a long-range rocket launch that was widely seen as a disguised ballistic missile test.

The UNSC responded earlier this March by imposing its toughest sanctions on North Korea to date. US President Obama signed an order on 16 March 2016 implementing the UN sanctions, as well as a series of unilateral US sanctions adopted by Congress. Pyongyang, meanwhile, has maintained a daily barrage of nuclear strike threats against both Seoul and Washington, ostensibly over ongoing, large-scale South Korea-US military drills that the North sees as provocative rehearsals for invasion. To register its anger at the joint exercises, the North fired two short-range missiles into the East Sea on March 10. A few days later, North Korean President Jong-Un announced that a nuclear warhead explosion test and firings of “several kinds” of ballistic rockets would be carried out “in a short time”. Existing UN sanctions ban North Korea from the use of any ballistic missile test, although short-range launches tend to go unpunished.

Source: <http://timesofindia.indiatimes.com/>, March 18, 2016.

NUCLEAR ENERGY

CHINA

Chinese Nuclear Plant Moves Closer to Start, Westinghouse Says

Westinghouse Electric Co. expects to put fuel into its first nuclear plant in China this 2016 as it moves closer to start up and vies for a share of a market that may see \$1 trillion in spending to boost production through 2050. Westinghouse, the Pennsylvania-based unit of Japan’s Toshiba Corp., is preparing to fire up its AP1000 reactor in China after years of delays. It’s one of four reactors using the company’s technology being constructed in China, split between two facilities. “As with any new technology, we have worked through a number of first-of-a-kind issues, and those are largely behind us now,” Benjamin, senior vice president

of new plants and major projects at Westinghouse, said in a phone interview on 18 March 2016. "Our commissioning and start up activities are progressing smoothly." Starting the reactors would be a shot in the arm for Westinghouse, which is competing with French, Russian and domestic producers to take advantage of China's plan to more than double its atomic generation capacity by the end of the decade. The company's first reactor in China is getting ready as

Starting the reactors would be a shot in the arm for Westinghouse, which is competing with French, Russian and domestic producers to take advantage of China's plan to more than double its atomic generation capacity by the end of the decade. The company's first reactor in China is getting ready as President Jinping shifts the world's largest energy consumer away from more polluting fossil fuels.

President Jinping shifts the world's largest energy consumer away from more polluting fossil fuels.

'Key Role': "They're looking at building a large number of nuclear reactors over the next couple of decades, and the AP1000 will play a key role in the expansion and development of nuclear energy in China," Benjamin said. Westinghouse's first AP1000 reactor is due to start by the end of 2016 on China's east coast, Liu, its president in Asia, said in November. It was originally scheduled to begin in 2013, but was delayed due to design problems, supply-chain bottlenecks and stricter safety measures after the 2011 Fukushima disaster in Japan. Benjamin said he couldn't comment on the schedule beyond loading the fuel.

China National Nuclear Corp. told Reuters earlier this March that it expected the first unit to go into operation in June 2017. The US company is also "really interested" in markets in Central and Eastern Europe and the UK, where nuclear power can help increase energy security, according to Benjamin, who also named Turkey as a country that has strong nuclear potential.

Australia Mix: In Australia, Westinghouse believes that nuclear power can play a role in the

electricity mix in the future and estimates that one of its AP1000 nuclear plants could power a city roughly the size of Adelaide, the capital of South

Australia, he said. The company is also interested in the possibility of long-term disposal of nuclear fuel in Australia, he said. While Australia is home to the world's largest uranium reserves, it has never had a nuclear power plant. Concerns over climate change have prompted debate in the country about whether to change that

stand. The storage and disposal of nuclear waste in South Australia would probably generate more than A\$5 billion (\$3.8 billion) a year in revenue, according to the preliminary findings by a commission on nuclear fuel in February. Such a facility would be commercially viable, with storage commencing in the late 2020s, the report found. "Perhaps some of the geology in Australia might lend itself well to long-term disposal options if there's sufficient interest in the country to play a role in that," Benjamin said.

Source: <http://www.bloomberg.com/>, March 18, 2016.

Reactor Vessel Delivered for China's First HTR

The first of two reactor pressure vessels for the demonstration HTR-PM high-temperature gas-cooled reactor unit under construction at Shidaowan in China's Shandong province has been delivered to the construction site. The component - about 25 meters in height and weighing about 700 tonnes

- was manufactured by Shanghai Electric Nuclear Power Equipment. It successfully completed factory acceptance on 29 February and was dispatched from the manufacturing plant on 2 March. The pressure vessel arrived at the

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Shidaowan site on 10 March, plant owner China Huaneng Group announced on 11 March 2016.

The company said it sent the project leader and supervision staff to supervise the entire manufacturing process of the reactor vessel, which it claims is the world's largest and heaviest. Work began on the demonstration HTR-PM unit - which features two small reactors and a turbine - at China Huaneng's Shidaowan site in December 2012. China Huaneng is the lead organization in the consortium to build the demonstration units together with China Nuclear Engineering Corporation (CNEC) and Tsinghua University's Institute of Nuclear and New Energy Technology, which is the research and development leader. Chinergy, a joint venture of Tsinghua and CNEC, is the main contractor for the nuclear island.

The demonstration plant's twin HTR-PM reactors will drive a single 210 MWe turbine. It is expected to start commercial operation in late 2017. An earlier proposal was for 18 further 210 MWe units - giving a total capacity of 3800 MWe - at the Shidaowan site, near Rongcheng in Weihai city, but this has been dropped. A proposal to construct two 600 MWe HTR plants - each featuring three twin reactor and turbine units - at Ruijin city in China's Jiangxi province passed a preliminary feasibility review in early 2015. The design of the Ruijin HTRs is based on the smaller Shidaowan demonstration HTR-PM. Construction of the Ruijin reactors is expected to start in 2017, with grid connection in 2021.

Source: <http://www.world-nuclear-news.org/> March 15, 2016.

GERMANY

Energy Giants Take Merkel Govt to Top Court Over Nuclear Phase Out

The three biggest energy companies in Germany have taken Merkel's government to the Constitutional Court over its decision to shut down all nuclear plants, seeking billions of euros in compensation for their losses. On 15 March 2016, the Federal Constitutional Court of Germany opened a two-day hearing into a legal argument between the Merkel government and Germany's

E.ON, RWE and Sweden's Vattenfall. The case comes five years after Berlin ordered the phasing out of all German nuclear plants by 2022 following the 2011 Fukushima nuclear disaster in Japan caused by a massive earthquake. The representatives of the three companies insisted in the court that their case was not aimed at Merkel's so-called energy transition policy envisaging the abandonment of nuclear energy. Instead, they called on the court to ensure that there was a "fair and just exit from nuclear energy" through the "compensation of assets, which [had been] invalidated for political reasons," dpa news agency reports.

"This is not a political issue or about whether you are for or against nuclear power. The question is simply: do we have the right, overnight, to deprive people...of their assets without compensation?" E.ON chief executive Teyssen told the Constitutional Court in Karlsruhe, as quoted by AFP. The government's decision deprived the energy companies of their major sources of profit and led to a fall in their share prices, the companies representatives argued. Additionally, the state subsidies for renewable sources of energy led to electricity oversupplies on the German market that caused a 50 percent drop in wholesale electricity prices. Earlier in March, E.ON announced that it suffered a €7 billion (\$7.7 billion) loss in 2015, particularly blaming the significant write-downs on the value of its power plants.

"I am here today on behalf of thousands of small investors, who have used E.ON shares as part of their savings and that have invested their pensions in E.ON shares," Teyssen told the court, as quoted by dpa. *"We paid our taxes, we paid our wages, we have done what every other company does with its investments,"* Teyssen told journalists before the hearing, stressing that his company invested billions of euros in nuclear energy technologies over the past decades.

According to the Bild newspaper, E.ON demands a compensation that amounts to € 8 billion (\$8.8 billion), while Vattenfall named a sum accounting for €4.7 billion (\$5.2 billion). RWE did not officially

announce any sum but German analysts say its damages could amount to €6 billion (\$6.6 billion). The total sum the companies are going to claim can then reach €19 billion (\$21 billion) in damages. In the meantime, safe decommissioning of all German nuclear plants and storing radioactive waste will cost around €50 billion

(\$55.5 billion), according to the experts cited by AFP. Meanwhile, the government is optimistic about the outcome of the hearing. Environment Minister Hendricks told German media she was sure that the government would win the case.

The government also argued the Fukushima nuclear disaster increased the risks of using nuclear power, while the representatives of the energy companies contested this claim. *"The risks connected with nuclear energy did not change following Fukushima, just their perception,"* Matthias Hartung, the head of the power generation business at RWE, said as quoted by Bild. The court is expected to pass a ruling on this case in several months. In March 2011, Merkel's

government decided to abandon the use of nuclear energy in Germany and to immediately halt all operations on the country's eight oldest nuclear plants just days after a 9.0 magnitude earthquake led to the Fukushima reactor meltdown. Other nine German nuclear power plants should be shut down by 2022. Now, eight nuclear plants remain in operation in Germany.

Source: <https://www.rt.com>, March 15, 2016.

RUSSIA–SOUTH AFRICA

Russia's Rosatom to Train South African Nuclear Energy Industry Staff

On the basis of joint educational programs, Russia's nuclear agency Rosatom will help train South African nuclear power industry's staff,

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according to the agency's statement on 16 March 2016. Russia's nuclear agency Rosatom will help train personnel to develop South Africa's nuclear power industry on the basis of its educational programs, according to the agency's statement on 16 March 2016. "A continuous improvement of personnel will allow South Africa to achieve

sustainable development and competitiveness in the world market of nuclear technologies," the statement reads.

The initiative is part of Rosatom's memorandum, signed in July 2015 with the South African authorities, on cooperation in the field of professional development and short-term training programs. According to the nuclear agency, these educational programs will allow South Africa to implement joint projects in the sphere of nuclear energy with African, as well as with other countries.

South Africa currently has two nuclear reactors generating 5 percent of its electricity. The government wants the nuclear energy industry to provide some 25 percent of the country's

electricity needs by 2030.

Source: <http://sputniknews.com/>, March 16, 2016.

USA

State Senate Wants Climate Change Funds Used for Nuke Power

Republican state lawmakers in the Senate are pushing a \$100 million bailout of the state's nuclear power industry using funds from a climate change program meant to cut greenhouse gases from power plants. The Senate's budget 2016-17 budget bill in response to Gov. Andrew Cuomo's plan calls for \$100 million from the Regional Greenhouse Gas Initiative for "the benefit of nuclear facilities that are not currently financially

viable but remain operational.” The proposal comes as state energy officials continue crafting a Cuomo-backed clean energy plan (Clean Energy Standard) that would include unspecified subsidies to financially stressed nuclear plants, which currently provide about 30 percent of the state’s total electricity.

Cuomo’s plan calls for the state to produce half of its electric power from renewable sources by 2030. Since RGGI was launched seven years ago, the program has collected more than \$925 million from power plant owners to cover greenhouse gas emissions that drive climate change. In recent years, historically low natural gas prices have driven down wholesale electricity costs as plant owners switched to that fuel, making nuclear power less competitive financially. Cuomo’s nuclear gambit comes as he has tried, so far unsuccessfully, to convince Entergy Corp., owners of the money-losing James A. FitzPatrick nuclear plant near Oswego, to shutter the 40-year-old facility by January. Cuomo wants Entergy to close its other nuclear plant, Indian Point, on the Hudson River in Westchester County, which provides about 40 percent of all nuclear-generated power in the state.

Backers of the FitzPatrick plant welcomed the Senate funding move, while some clean energy advocates expressed strong misgivings. “It’s heartening to see such support included in the state’s budget proposals, and also why we need to work together to implement Gov. Cuomo’s Clean Energy Standard in a timely manner to ensure the long-term viability of these plants,” said Treadwell, CEO of the Oswego County Industrial Development Agency and a member of Upstate Energy Jobs, a regional coalition of political, civic and labor groups.

“This investment is certainly worthwhile given the significant contributions these plants make to the

state and given the potential losses that would result if they were lost,” added Treadwell. The coalition also supports continued operation of the Nine Mile Point Nuclear Generating Station in Oswego County and Ginna Nuclear Generating Station in Wayne County. Bambrick, air and energy director of the Albany-based lobbying group Environmental Advocates of New York, called the Senate plan “disheartening ... in the Senate, you have people saying climate change isn’t real, but they turn to the climate change program to take \$100 million.

Bambrick said he could “think of a lot better ways to reduce the state’s carbon emissions than

blowing \$100 million on nuclear plant operations.” The state Senate press office did not return a call seeking comment. Meanwhile, the state Public Service Commission, which is studying how to implement Cuomo’s clean energy plan, on 14 March 2016 canceled a meeting set that was to outline the potential costs of the program. Cuomo has said he wants a final plan in place by June.

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Without a cost study in hand, the commission agreed to extend the public comment period on Cuomo’s plan to run for two weeks after the cost study is finally submitted. Also, an Otsego County alternative energy advocate warned the Public Service Commission that adopting a nuclear-only state subsidy program under the clean energy program — proposed to be called Zero Emission Credits under the Cuomo plan — could prove hard to halt later on.

“At some future date, the withdrawal of ZEC subsidies will become a political struggle with a very unpredictable outcome,” wrote Anderson, owner of Anderson Boatworks in Otego. He added the subsidies would create “incentives for less-than-energetic pursuit of our environmental goals.” But Schue, a technical adviser for Otsego 2000, an environmental conservation organization

based in Cooperstown, said reaching clean energy goals without nuclear plants would be difficult, it not impossible. Replacing the power from the three upstate nuclear plants would require about 2,700 onshore wind turbines. "At some point, reality needs to be a factor in what we suggest. If nuclear power suddenly goes away in New York, we will be burning a lot more natural gas. And the gas industry will be laughing all the way to the bank," Shue said.

Source: <http://www.timesunion.com/>, March 16, 2016.

URANIUM PRODUCTION

GENERAL

Uranium Production Costs Fall for the First Time in 5 Years

There was good news in the Uranium sector in the form of a report that working conditions appear to be improving for the world's major producers. That was the conclusion from research published 22 March 2016 by mining analysts CRU, which claimed that costs are coming down across the global uranium mining industry. CRU found that weighted average site costs for production fell by \$1/lb during 2015. This was caused by factors such as currency depreciation against the US dollar in key producing nations such as Kazakhstan, Australia, and Canada. Industry productivity improvements and lower global prices for inputs like sulphuric acid and diesel also played a role.

Here's the most critical point. CRU said this is the first year since 2010 that uranium production costs have declined. This shows that the downturn in the sector is just now starting to catch up with cost pressures. But the savings being enjoyed are

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disparity across the cost curve. With CRU finding that Kazakhstan's in-situ leach projects are still the world's lowest-cost producers, followed by Canada's underground mines. But the fact that costs are coming down nearly everywhere is very good news for the industry. Watch for stealthily rising profits from producers — and keep an eye on currency exchange rates against the dollar as a key input going forward.

Source: <http://oilprice.com/> March 24, 2016.

NAMBIA

Uranium Production to Triple in 2017

Nambia's uranium production is expected to be three times the volume produced in 2015, according to statistics issued by Finance Minister Schlettwein in parliament recently. "We are of the opinion that, in spite of weak commodity prices and relatively slow growth in external demand, the coming into operation of large-scale mining projects will support decent levels of economic growth. Namibia's output of uranium in 2017, for example, is projected to be more than three times the volume produced in 2015, thanks in large part to the Husab uranium mine," said Schlettwein.

Based on the 2015 figures estimated at 3 713 metric tonnes, output in 2017 is expected to be around 11 100 metric tonnes. Namibia is one of the biggest uranium producers in the world after Kazakhstan, Canada, Australia and Niger.

Schlettwein said gold output is similarly expected to be more than three times the 2014 levels in 2016, with the B2Gold mine at Otjikoto reaching full production. Gold production in 2015 was estimated at 6 008 kilogrammes. "This considerable improvement in growth in the mining sector is expected to be accompanied by an eventual recovery in agriculture from the low base created by drought, and a relatively mild slowing in growth in major service sectors such as retail and financial intermediation. Furthermore, tourism and export-oriented industries are expected to benefit considerably in 2016 from the recent depreciation of the Namibia dollar," said Schlettwein.

Figures obtained from the Bank of Namibia showed that uranium production contracted during both 2014 and 2015, whereas gold production rose significantly over the same period. The central bank expects uranium production to expand by 62.9% in 2016 and by 89.5% in 2017. Gold production increased by 7.9% in 2014. With Otjikoto coming into production in 2015, gold production increased by 182.5%, according to BoN statistics.

Source: <http://www.namibian.com.na/> March 24, 2016.

NUCLEAR COOPERATION

BELARUS–LITHUANIA

Belarus is Ready for Cooperation with Lithuania on Nuclear Security Issues

Belarus is ready for regular good-neighborly cooperation with Lithuania on nuclear security issues, BelTA learnt from Belarus' First Deputy Minister of Natural Resources and Environment Protection Malkina who is attending the 35th session of the Espoo Convention Implementation Committee in Geneva. "Belarus is ready for regular good-neighborly and bona fide cooperation with Lithuania on the nuclear security issues. We have already invited the Lithuanian side and members of the Espoo Convention Implementation Committee to Ostrovets to receive all necessary information on any technical issues. We expect the corresponding constructive

approaches from Vilnius," she stressed. According to Malkina, no new questions were voiced during the speech of the Lithuanian delegation. "These were the arguments we have repeatedly heard for the last five years. Unfortunately, the Lithuanian delegation was not ready for a constructive technical discussion of the project. We hope that in addressing out disputable matters there will be less politics and more constructivism as well as positive practices for further fruitful cooperation," she said.

Speaking about the invitation of Lithuanian representatives to Ostrovets, the First Deputy Minister said that Belarus has not received any answer in response from the delegation of the neighboring country. "We think we have caught Lithuania flatfooted. They were not ready for such an open dialogue, especially under the aegis of the Espoo Convention Implementation Committee," noted Iya Malkina. The 35th session of the Implementation Committee of the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) is running in Geneva, Switzerland on 15-17 March. The Implementation Committee invited Belarus and Lithuania to attend the meeting on the first day. The Belarusian delegation will be led by First Deputy Natural Resources and Environmental Protection Minister Malkina.

The delegation also includes Belarusian Deputy Energy Minister Mikhadyuk. The UN Economic Commission for Europe's Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) expects the signatories to notify and consult each other about all the major projects that can have a considerable negative transboundary impact on the environment. ...

Source: <http://eng.belta.by/>, March 15, 2016.

RUSSIA–SAUDI ARABIA

First Meeting of the Saudi–Russian Coordinating Committee for Peaceful Nuclear Cooperation

First meeting of the Saudi-Russian Coordinating Committee for Peaceful Nuclear Cooperation took

place on March 15, 2016. It was co-chaired by Al-Faraj, the Deputy Chairman of the King Abdullah City for Atomic and Renewable Energy, and Komarov, First Deputy CEO and Director of Corporate Development and International Business of ROSATOM. At the meeting, the parties reviewed the implementation progress of the Intergovernmental Agreement between the two countries on the peaceful nuclear cooperation signed on June 18, 2015. They discussed different aspects of the cooperation, its development and implementation of joint nuclear power programs and projects.

Earlier in Riyadh Komarov had a meeting with Head of the King Abdullah City for Atomic and Renewable Energy Yamani. Plenipotentiary and Extraordinary Ambassador of the Russian Federation to the Kingdom of Saudi Arabia Ozerov also took part in the meeting. It was noted that Saudi Arabia was striving to develop renewable power sources for generation of electric power and water desalination using nuclear and renewable power to endeavor to maintain its hydrocarbon resources for the future generations or invest the same by export and production, since this would provide possibilities for investment and functional development of the economy.

Source: <http://www.rosatom.ru/>, March 15, 2016.

NUCLEAR NON-PROLIFERATION

USA-JAPAN

South Carolina Governor Urges US to Divert Plutonium from Japan

South Carolina Governor Haley has written to US Energy Secretary Moniz demanding a shipment of

weapons-grade plutonium en route to her state from Japan be turned back or sent elsewhere, according to a copy of the letter seen by Reuters. The demand has the potential to embarrass the Obama administration a week before it hosts an important summit on nuclear non-proliferation and undermine what so far has been viewed as a success in keeping weapons-grade material safe. The ship loaded with weapons-grade plutonium left Japan for a Department of Energy site in South Carolina on 22 March 2016 in what is the largest such shipment of the highly dangerous material since 1992, the environmental group Greenpeace said.

The shipment "puts South Carolina at risk for becoming a permanent dumping ground for nuclear materials," Haley said in the letter dated March 23. "Therefore, stop shipment or re-route this defense plutonium. God bless." Its expected arrival comes as Washington prepares to host the NSS March 31 to April 1. The plutonium being shipped was supplied by the US, Britain and France for the government-owned Japan Atomic Energy Agency's Fast Critical Assembly research project in Tokai Mura, according to the International Panel on Fissile Materials.

The agreement to transfer the material to the US was reached in March 2014 at a previous non-proliferation summit, the panel said on its website. The 331 kilograms (730 pounds) on board the British-owned Pacific Egret is only a tiny proportion of the nearly 50 tonnes (55 tons) of plutonium held by Japan. Japan wants to use the plutonium extracted from spent fuel in nuclear plants as fuel for modified reactors. But with nearly all the country's units still shut down in

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Only a few reactors can take plutonium as fuel. A homegrown reprocessing plant being built in northern Japan, which has relied on the British and French to extract plutonium from spent uranium fuel rods, also has the potential to add to the stockpile, although its start has been repeatedly delayed. The plutonium being shipped, enough to make about 50 nuclear weapons, was taken from the nuclear research center in the port town of Tokai Mura near Tokyo, for transport to the US Department of Energy's Savannah River Site in South Carolina.

The website www.vesselfinder.com said the ship is a nuclear fuel carrier. Shipments of plutonium are highly sensitive because it can be used in nuclear weapons or to make a so-called dirty bomb. In Japan, public sensitivity is also high because it is the only country that has been attacked with nuclear bombs. Japan is also the only nation without atomic weapons with significant amounts of plutonium, which has led to constant criticism from neighboring countries, scientists and others. China, a nuclear weapons state, repeated criticism of Japan and said it should abide by its non-proliferation obligations.

"Japan is still stockpiling a large amount of other sensitive nuclear materials, including separated plutonium and highly enriched uranium. This certainly is an issue for the international community to be concerned about," Chinese FM spokeswoman Chunying said at a daily briefing on 22 March 2016. Countryman, an assistant US secretary of state in charge of non-proliferation, called into question the renewal of an agreement between Washington and Tokyo that allows Japan to reprocess and produce weapons-grade plutonium. The agreement is due to be extended in 2018, but with a new US administration starting in January its status is unclear.

"We think that there are genuine economic questions where it's important that the US and its partners in Asia have a common understanding of the economic and non-proliferation issues at stake before making a decision about renewal of the 1-2-3 Agreement, for example, with Japan," Countryman told a Senate hearing.

Source: <http://www.dailymail.co.uk/>, March 24, 2016.

NUCLEAR PROLIFERATION

IRAN

Iran May Still Depend on North Korea to Procure Materials for Missiles, Report Says

A report by Washington's CRS raised suspicions that Iran boosted its missile development by taking help from North Korea and may still be dependent on the Jong Un regime to get some materials for the ballistic missiles, Yonhap reported. The CRS report cited the intelligence community to say that North Korea's cooperation with Iran was significant until the 2000s.

"Iran has likely exceeded North Korea's ability to develop, test and build ballistic missiles. But Tehran may, to some extent, still rely on Pyongyang for certain materials for producing Iranian ballistic missiles, Iran's claims to the contrary notwithstanding," the report said, according to Yonhap: "For example,

some observers argue that Iran may not be able to produce even its Scud B and Scud C equivalents — Shahab-1 and Shahab-2, respectively — without some foreign support for key materials or components."

However, the report cited Clapper, director of National Intelligence, as saying in 2014 that Iran was not receiving assistance for its inter-continental ballistic missile program. He also said in February that there has "not been a great deal of interchange" between Tehran and Pyongyang. While the report raised suspicions about the Iran-North Korea partnership over missile programs, it

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said that Syria continues to depend on the two countries for its missile program. The report noted a testimony from Defense Intelligence Agency Director Michael Flynn in 2013 that Syria's liquid-propellant missile program — Scud B, Scud C and Scud D missiles — depends on “essential foreign equipment and assistance, primarily from North Korean entities,” Yonhap reported.

Although an official analysis by the US has reportedly said that there has not been any cooperation between Iran and North Korea, local news reports have indicated some alleged cases of cooperation between the two countries. Among the local reports, there has also been speculation about Iranian officials looking into North Korea's nuclear tests. “US officials have stated publicly that there is no nuclear cooperation between Iran and North Korea,” the report said, according to Yonhap, adding: “Knowledgeable current and former US officials contacted by CRS said that they were unaware of official unclassified US government evidence of nuclear cooperation between Iran and North Korea.”

The report also cited Blair, who was director of National Intelligence in 2009, as saying that North Korea could try to transfer its nuclear technology and material. “Pyongyang probably also perceives that it would risk a regime-ending military confrontation with the US if the nuclear material was used by another country or group in a nuclear strike or terrorist attacks, and the US could trace the material back to North Korea,” the report cited Blair as saying, according to Yonhap. He also added, according to Yonhap: “The North might find a nuclear weapons or fissile material transfer more appealing if its own stockpile grows larger and/or it faces an extreme economic crisis where the potentially huge revenue from such a sale could help the country survive.”

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North Korea tested nuclear devices in 2006, 2009 and 2013 after which it announced this January that it conducted its fourth nuclear test. Since then, the country has also conducted missile tests, launched a rocket and has threatened attacks against Western allies several times. The UNSC, US, and South Korea have condemned the nuclear advancements by Pyongyang, but Kim has called to boost nuclear capability furthermore.

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have condemned the nuclear advancements by Pyongyang, but Kim has called to boost nuclear capability furthermore. Iran also test-fired several ballistic missiles, challenging a UN resolution, and triggering threat of sanctions from Washington. Although Iran's missile tests raised concerns over the nuclear deal signed by Tehran in exchange of lifting the economic sanctions, officials have said that the nuclear deal was not violated.

Source: <http://www.ibtimes.com/>, March 14, 2016.

Missile Tests Don't Violate Nuclear Deal: Iran FM

The UNSC met on 14 March 2016 at the request of the US to discuss the missile tests that have raised the prospect of new sanctions. He said the wording of the resolution did not use obligatory terms so “Iran is not obliged by 2231”. Secondly, it covered only missiles “designed to be capable of carrying nuclear warheads”, he told reporters in Canberra. “Since we do not have nuclear warheads and we have undertaken not to develop them, and the international community has put in place the best mechanisms money can buy in order to make sure that we do not develop nuclear weapons... we do not design any missiles to carry things we do not have,” Zarif said.

“So these missiles do not fall within the purview of 2231 and they are not illegal.” Iran fired two long-range ballistic missiles on March 9, one day after similar tests that came fewer than two

months after the Iran nuclear deal was implemented. Zarif stressed that the missiles were being developed only for Iran's defence. Under the historic nuclear deal, most UN sanctions resolutions against Tehran were lifted, but an arms embargo and restrictions on ballistic missile technology remain in force. Australian FM Bishop said she had raised the question with her Iranian counterpart, and they had had a "very detailed discussion". "We discussed the perception, the political circumstances surrounding the timing of this," she said. "It is Australia's position that should the UNSC wish to investigate this matter, then that would be the proper legal process for it to do so."

Source: <http://www.timeslive.co.za/> March 15, 2016.

NUCLEAR DISARMAMENT

GENERAL

International Court Deliberates on Marshalls' Nuclear Case

The lawyer representing the Marshall Islands in its international anti-nuclear case says this March hearings have shone a light on the lack of formal talks on nuclear disarmament. Sixteen judges of the ICJ – a UN body – have heard preliminary arguments and are now deliberating on whether the cases against Pakistan, India and the UK should go ahead. The Marshall Islands filed lawsuits at the court in The Hague, in The Netherlands, nearly two years ago against nine states including declared nuclear powers China, France, Russia, and the US, as well as Israel and North Korea. Only Britain, India, and Pakistan made a commitment to respond to the

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suits. In its case, the Marshall Islands, where the US tested 67 nuclear weapons between 1946 and 1958, accused them of flagrant violation of international law for failing to pursue the negotiations required by the 1968 NPT, which pushes for nuclear disarmament. In the cases against India and Pakistan, the court examined whether it was competent to hear the lawsuits.

The lawyer, Biesen, said the countries said they did not have a dispute with the

Marshall Islands, but said that they were living up to their obligations to negotiate and conclude talks on nuclear disarmament, something that the Marshall Islands disputes. "These preliminary stages of the cases very much help in showing to the world that actually no negotiations towards that goal are taking place and that is a violation of international law," said Mr Biesen. "At this point in time, nowhere on earth – within the UN or outside the UN or nowhere in any official body – any serious negotiations [taking] place on the nuclear weapons convention. That has been so basically since the beginning of the NPT," he said.

In court, India argued that it was living up to its obligations, and had a record within the UN in favour of nuclear disarmament and negotiations. However, Mr Biesen said Britain, which had argued the same, had "the exact opposite" record at the UN. The Marshall Islands is pursuing a separate case against the US, which only recognises the ICJ on a case-by-case basis, but that case hit a stumbling block in 2015 when it was thrown out by the Federal District Court in San Francisco. An appeal is underway. But many activists and academics believe getting the three larger nations into court is a victory in itself for the Marshall Islands which is home to just 50,000

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people. "I think the great advantage with these hearings," said Mr Biesen, "is that the issue of negotiating nuclear disarmament has received broad attention again."

Source: <http://www.radionz.co.nz/>, March 22, 2016.

NUCLEAR TERRORISM

NEW ZEALAND

PM to Talk Up TPP While in US

PM Key will talk up the Trans-Pacific Partnership when he's in Washington. He's going there to attend the final round of leaders' talks on countering the threat of nuclear terrorism. Mr Key has attended the three previous summits, which were held in Washington, Seoul and The Hague. "Even as a small country New Zealand isn't immune from the risks posed by nuclear terrorism and it's important we play our part in efforts to prevent it," he said at his post-Cabinet press conference on 21 March 2016....

Source: <http://www.newshub.co.nz/>, March 22, 2016

New Zealand Committed to Securing Nuclear Materials

PM John Key, said on 21 March 2016, in Wellington that New Zealand is committed to helping prevent nuclear terrorism. He said this was coming ahead of his attendance at the fourth and final NSS in Washington from March 29 to April 1. Key said the NSS is an opportunity for him and those in attendance to address nuclear terrorism threats at the global level. "New Zealand is committed to the goal of securing vulnerable nuclear materials worldwide. "This meeting will be a chance to press for greater international cooperation in this area," he said.

The PM said his country had been represented at the previous three NSS, which were held in Washington in 2010, in Seoul in 2012 and The Hague in 2014. "Since the first NSS in 2010, New Zealand has contributed more than 2.7 million dollars to international projects to strengthen

nuclear security. "We have also taken action to secure material in New Zealand through the Radiation Safety Act 2016, which was passed earlier this March, and provides new regulations for people who use or manage radioactive or nuclear material," he said. Kay stressed that as small as New Zealand is, it is not immune to the risks posed by nuclear terrorism....

Source: <http://leadership.ng/>, March 22, 2016.

NUCLEAR SAFETY

CHINA

Asia-Pacific's Largest Nuclear Safety Centre Opens in China

The largest nuclear security centre in the Asia-Pacific region, jointly financed by China and the US to train personnel of countries in the region on protection and control of nuclear materials, opened here 18 March 2016. The centre, constructed by the China Atomic Energy Authority (CAEA) and the US Department of Energy, is able to train about 2,000 nuclear-security staff for China and other nations in the Asia-Pacific region every year, CAEA chair Dazhe said. Construction of the centre, which is the largest nuclear programme to have direct the Chinese and US investment, began in December 2013. Top Chinese, US and IAEA officials attended 18 March 2016 the event. China and the US agreed to establish a nuclear security centre at the NSS in Washington in 2010. Under the agreement, the centre, which is located in Fangshan District, Beijing, is run and administered by China, while the US is responsible for providing nuclear-security equipment.

According to the CAEA, the site will become a centre for international

exchanges and cooperation on nuclear security, the demonstration of advanced technology, testing and analysing. Commenting on its significance, China's FM spokesman, Kang said it was constructed one year ahead of schedule and demonstrated close cooperation between China and US. China is committed to enhance nuclear security and promote international cooperation, he said at a media briefing here. Earlier President

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Jinping said the centre will be developed as the largest and the most advanced in the nuclear field.

The centre is a significant achievement in China-US nuclear security cooperation, and will boost cooperation in the Asia-Pacific region and the world, Yiren, deputy director of the CAEA said. It will also promote the peaceful use of nuclear power, Wang, who is also deputy head of the China's State Administration of Science, Technology and Industry for National Defence said. The two countries have also cooperated in other nuclear security areas such as low-enriched reactors, security of radioactive sources and radiation detection by customs authorities, according to Wang. The centre came as China is massively expanding its nuclear reactor network.

China currently has 30 operational nuclear power generating units, with a total installed capacity of 28.31 GW. It also has 24 units with a total installed capacity of 26.72 GW under construction, ranking first in the world. As planned, China's installed nuclear power capacity will reach 58 GW with an additional 30 GW under construction by 2020. "Construction projects for six to eight new generators are expected to begin each year from 2016 to 2020," Wang said. He also said China was mulling building of offshore floating nuclear power stations.

Source: <http://www.business-standard.com/>, March 18, 2016.

INDIA

Kakrapar Leak A 'Level-1' Nuclear Mishap, Says AERB

India's atomic energy regulatory body has classified 11 March 2016 nuclear reactor leak at the KAPS as a Level-1, or the lowest in a seven-rung classification scheme internationally used to rate the severity of nuclear mishaps. Akin to the Richter scale, used to quantify the severity of an earthquake, the INES scale, developed by the IAEA, rates a Level 1 as only akin to 'an anomaly in the plant.' Levels 1-3 are termed 'incidents' and 4-7 as 'accident.' By comparison, the nuclear accidents in Fukushima, Japan in 2011 and Chernobyl, Russia in 1986 were Level 7 incidents,

according to the AERB update.

On 11 March 2016, one of the pipes carrying heavy water ruptured and led to leakage on the floor of the reactor building. Though plant operators have identified the location of the leak, it will take a while for it to be plugged. Moreover, the leak occurred in a subsystem that had been refurbished with better quality material in 2011, as part of a planned upgrade. "The present situation at KAPS Unit 1 is stable and the reactor is in cold shutdown state. The reactor is being continuously cooled and at present there are no major safety concerns. There has been no radioactivity release exceeding the specified daily limits for normal operation, between March 11, 2016, till date. There has also

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not been any case of workers receiving abnormal radiation exposures," says the update by AERB, the safety assessor of India's nuclear plants.

Harikumar of AERB said that though heavy water, a key component used to facilitate a nuclear reaction,

was still leaking at the plant he didn't expect anything untoward going ahead, as there was no surge in radiation. However, independent experts said it was "surprising" that the incident was classified only as a Level-1 incident. "Right now we have contradictory reports on the quantum of the leak. A Level-1 classification may be underestimating the seriousness of the incident," said Gopalakrishnan, former Chairman, AERB and vocal critic of the India's nuclear establishment.

Source: <http://www.thehindu.com/>, March 16, 2016.

Oldest Nuclear Reactors at Tarapur Near Mumbai may be Shut Down

India may shut two of its oldest reactors almost five decades after they went into operation as power tariffs aren't keeping pace with maintenance costs, according to Basu, secretary at the DAE. The first two reactors at Tarapur, about 100 kilometers (62 miles) from Mumbai at India's western coast, suffer frequent maintenance shutdowns that make them unprofitable, Basu said in a phone interview. They earn about Rs 0.89 (1 cent) for every kilowatt hour of electricity produced, which isn't enough to sustain operations. Nuclear plants in India received an

average tariff of Rs 2.78 per kilowatt hour in the year ended March 2015, according to the DAE.

"We are pouring in money into the reactors rather than making income from them," Basu said. "At the current tariff, it's become unviable to run the two reactors and we may be forced to shut them down if the tariff is not increased." Basu didn't provide details on the timing of a possible decommissioning, a process that can take decades and generate thousands of tons of radioactive waste. Nuclear Power Corp., the nation's sole operator of nuclear power plants, may approach the electricity regulator for a tariff increase when operations become unsustainable, Basu said.

Liability Law: Nuclear Power spokesman Nagaich couldn't be reached on his office phone for a comment... The boiling water reactors, which can produce 160 megawatts each, were supplied by General Electric Co. and started operating in 1969, marking India's foray into nuclear energy. India plans to raise atomic power capacity more than ten-fold by 2032 as part of its clean-energy drive. The expansion plans have been complicated by the nation's liability law. The statute, which exposes plant equipment suppliers to accident claims, is borne out of concerns over nuclear safety.

'Significant Improvements': The nation's older reactors, including the two at Tarapur, have gone through "significant" safety improvements based on periodic reviews, according to India's AERB. Two other reactors, 540 megawatts each, started at Tarapur in 2005 and 2006. Tarapur 1 and 2 aren't capable of in-service inspections, like some newer reactors, and need to be cooled down for safety inspections, which are frequent, Basu said. One of the two reactors has been offline since September 2015, according to a 9 March Central Electricity Authority report. The reactors are under IAEA's safeguards and run on imported uranium.

Source: <http://www.livemint.com/>, March 15, 2016.

PAKISTAN

Pakistan Ratifies Nuclear Material Protection Pact

... "Pakistan has ratified the 2005 Amendment to

the Convention on the Physical Protection of Nuclear Material (CPPNM). The Instrument of Ratification was signed by President Mamnoon Hussain on the advice of the Prime Minister (Nawaz Sharif)," a Pakistani Foreign Office statement said. In a meeting held in February under the chairmanship of the Prime Minister, the NCA had given its approval in principle for the ratification of the Amended Convention.

It establishes measures related to the prevention, detection and punishment of offences related to nuclear material. ... "The ratification of the 2005 Amendment to the CPPNM is a reaffirmation of Pakistan's commitment to the objective of nuclear security and reinforces

Pakistan's credentials as a responsible nuclear state. It demonstrates Pakistan's confidence in its national nuclear security regime which is at par with the latest international standards in the field," the statement said. ...

Source: <http://economictimes.indiatimes.com>, March 21, 2016.

NUCLEAR WASTE MANAGEMENT

GENERAL

New Computer Models Promise Better Analysis of Underground Nuclear Tests

A new analytic technique used with computer modeling could help international nuclear weapons inspections teams track down and determine a more thorough signature of nuclear weapons used in secretive subterranean tests like the one North Korea conducted earlier this year. Scientists at Lawrence Livermore National Laboratory have developed a computer modeling technique to better track noble gases, such as radioactive xenon isotopes, that can carry the signature of what kind of nuclear weapon was tested. The research team was able to simulate the signature of gases that escape into the atmosphere after an underground nuclear test.

North Korea claimed it conducted an underground test of a hydrogen bomb in January. According to LLNL, the new technique can find a secret

underground test site within a 1,000 square kilometer search area during onsite inspections carried out under the CTBT. The research also may have applications in monitoring other heated or pressurized subsurface operations, such as in situ coal gasification, deep sequestration of supercritical CO2 and nuclear waste disposal.

Source: <https://fcw.com>, March 21, 2016.

USA

WIPP Nuclear Waste Spill Investigation Concludes

In February 2014, fire erupted at New Mexico's Waste Isolation Pilot Plant (WIPP), the country's only permanent nuclear waste repository. Later that month, in an unrelated incident, containers of nuclear bomb debris leaked radioactive

particles into the air. In response, the Department of Energy shut down WIPP, leaving the defense industry with nowhere to dispose of radioactive waste like clothing, machinery parts, and sludge.

The Energy Department concluded its investigation in late February, finding that Los Alamos National Laboratory workers incorrectly packaged waste shipped to WIPP, leading to the leak and exposing more

than 20 workers to radiation. Federal officials issued safety violation citations to two contractors, but no fines. WIPP disposal operations may resume this 2016, but the cost of re-starting is estimated at nearly a half-billion dollars. In the meantime, waste is backing up at Los Alamos and elsewhere, including sites in Nevada and Idaho.

Source: <http://www.hcn.org/>, March 21, 2016.

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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).

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