



A FORTNIGHTLY NEWSLETTER ON NUCLEAR DEFENCE, ENERGY AND PROLIFERATION FROM
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OPINION – Manpreet Sethi

Universal Nuclear Disarmament through the Humanitarian Consequences Route: Analysis

The tenacity of nuclear weapons to continue to exist is evident. At the end of the Cold War, many wrote obituaries claiming that these weapons would soon be the “detritus of the Cold War.” Nothing however, could have been further from the truth. Half a century later, the weapons are still around in large enough numbers to pose dangerous risks to humanity.

It is in this context that it is interesting to examine a two-year old development that has taken a new approach to the challenge of ridding the world of nuclear weapons. This is the initiative that was primarily spearheaded by Norway, Mexico, Austria, Ireland, Switzerland and New Zealand. It hit headlines in March 2013 when the first conference on humanitarian consequences of nuclear weapons was held in Oslo. It focused on the impact of nuclear weapons on human life. Based on testimonies of the hibakushas (survivors of Hiroshima and Nagasaki), and presentations from factual studies on effects of nuclear explosions, 128 countries reached the conclusion that effects of the use of nuclear weapons were not constrained by

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borders and that no single nation or international body had the resources or the capability to deal with the consequences. Interestingly, India and

Pakistan were the only nuclear-armed states that chose to participate in the conference. The five NPT nuclear weapon states, and Israel and North Korea, ignored the congregation.

In March 2014, an even larger number of nations, 146 this time (though still not the NWS) came together in Mexico to further highlight the humanitarian challenges of nuclear weapon explosions. More and detailed studies

were presented on the long term socio-economic impact of use of nuclear weapons. It was

established that reconstruction of infrastructure and regeneration of the socio-economic parameters on which we today measure quality of life would take decades to rebuild if the world were to witness a nuclear exchange. However, the only possessors in the Conference were from India and Pakistan. Seven other nuclear-armed states, two of which own more than 90 per cent of the global nuclear stockpile, evinced no interest in the subject!

On 8-9 December 2014, a third Conference on the subject is being hosted by the government of Austria in Vienna. It proposes to specifically focus on the impact of nuclear explosions on human health, climate, food security and infrastructure. Also included are sessions on inadvertent nuclear use as a result of human and technical factors such as error, negligence, miscalculations, miscommunications, cyber interference, technical faults etc. The US has expressed a willingness to participate in this third conference, though none of the other nuclear weapon states has yet joined in. The presence of the US

would be welcome, but it is likely that the decision has been made with an eye on the forthcoming NPT RevCon which is less than six months away now. The three preparatory committee meetings over the last three years have not made any major breakthroughs that herald well for the outcome in 2015.

Rather, the RevCon will have to bear the additional burden of vitiated US-Russia relations. Though the two have traditionally made common cause in upholding non-proliferation through the NPT (which was crafted at the height of the Cold War in 1967), the present day dynamics will make it interesting to track the RevCon. Compared to the entrenched national positions in the NPT and its divisive nature, the more inclusive humanitarian consequences approach to universal nuclear

disarmament is indeed fresh and more appealing. In fact, it is critical that the Conference continues to remain a platform that has the ability to reach across old formulations that box nations into different categories with different rights and responsibilities. It will be a challenge for the Conference to retain this distinctive character from the NPT or it could end up replicating the same divisive national mind-sets. Humanitarian consequences of nuclear weapons, however, would make no such distinctions. It is high time that nations come together as human congregations to address serious and urgent challenges in an inclusive and collective fashion.

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Given that India believes that its national security interests are best served in a world free of nuclear weapons, it must remain engaged with the process with an open mind. No quick results are in the offing and neither should these be expected. But to the extent that the Conference can galvanise action that may incrementally lead to universal nuclear disarmament, it would be useful. In this context, the Indian intervention in the last

conference for measures that reduce the salience of nuclear weapons should be actively pursued. India has long argued for delegitimation of nuclear weapons as one way to get to disarmament. Given that Austria, the host country, has a similar view, Vienna should support India's position for its larger good instead of sticking to its NPT oriented mind-set that has not allowed it, up till now, to accept India's resolutions on the subject in the UN.

The country has a unique perspective on the issue. Unlike in any other nuclear-armed state, India's nuclear doctrine, which is meant to operationalise its nuclear strategy, begins and ends with reiterating the country's desire for nuclear disarmament. India must push for steps that make nuclear weapons lose their perceived utility.

Human nature does not permit the discarding of anything that it considers to be of value. Therefore, a devaluation strategy that deprives the weapons of utility coupled with a focus on the catastrophic humanitarian consequences if they ever were to be used can prepare the ground for their eventual elimination.

Source: <http://www.eurasiareview.com/>, 17 November 2014.

OPINION – Sitakanta Mishra

Stabilizing* (T&C Apply)

Ever since 1998, India and Pakistan have been in the process of consolidating their nuclear posture – especially in terms of nuclear-use doctrine, command and control, miniaturisation of warheads, inventory expansion, diversification of delivery vectors, and the latest being the third-leg of their nuclear triad. All these developments are interpreted with alarming psyche, and viewed as distinct from the Cold War nuclear deterrence trends, largely owing to the differences in power perceptions between South Asia and the West. Nonetheless, neither country will rest without acquiring “deterrence capability at all levels of the threat spectrum” within a decade or so.

Realistically, the presumed “nuclear flash point” – the Kashmir issue – may remain unresolved for the next half a century. Even if it does work out, Pakistan is not likely to give up its pursuit for parity with India and terrorism as a state policy to “bleed India with a thousand cuts.” Meanwhile, nuclear weapons would remain its sole trump card, and a feel-good factor, for deterring India (as well as for domestic political consumption), disregarding the fact that this does not guarantee Pakistan invulnerability completely.

Basically, the risk of a nuclear escalation in South Asia and nuclear arsenals falling into wrong hands

emanates from Pakistan’s doctrinal opacity and lack of organisational sanctity. Overwhelmed by India’s conventional military superiority and prompted by nuclear parity syndrome, Pakistan has often resorted nuclear brinkmanship; its effort to acquire sea-based assets is simply part of this brinkmanship.

Nevertheless, it can *enhance** (terms & conditions apply) deterrence stability in South Asia, provided Pakistan’s program is based on SSBNs and restricted to ballistic weapons with centralised command and control structure. India’s INS *Arihant* is known to have four vertical launch stations (VLS) which can house 12 K-15 SLBMs i.e. three in each tube or each tube can be fitted with one 3,500 km

K-4 SLBM. If Pakistan does fit nuclear tipped submarine-launched cruise missiles, it would result in the delegation of the control of nuclear weapons to the tactical level, dangerously destabilizing the situation. If Pakistan sticks to its plan, India has to logically opt for a robust cruise missile defence (CMD) capability to nullify Pakistan’s nuclear brinkmanship. Therefore, stable or unstable nuclear South Asia is Pakistan’s choice.

Generally sea-based assets specifically based on SSBNs, are viewed as a resilient nuclear force that increases

survivability of the deterrent, thereby reinforcing the second-strike capability. An assured second-strike capability would, therefore, drop-off the first-strike temptation. One may argue that an assured second-strike capability would bestow more confidence for its reserved first-use option. However, if the evolution of nuclear weapon states’ behaviour is any guide, states seem to behave relatively rationally once they attain NWS status. From this perspective, a sea-based deterrent might prompt Pakistan to adopt a NFU policy (maybe after it acquires SSBNs, a real sea-based deterrent, which is not likely in the near future).

Currently, Pakistan has no nuclear-powered SSBNs. Putting nuclear-tipped missiles onboard diesel-powered or conventional submarines and ships,

The risk of a nuclear escalation in South Asia and nuclear arsenals falling into wrong hands emanates from Pakistan’s doctrinal opacity and lack of organisational sanctity. Overwhelmed by India’s conventional military superiority and prompted by nuclear parity syndrome, Pakistan has often resorted nuclear brinkmanship; its effort to acquire sea-based assets is simply part of this brinkmanship.

as Pakistan plans now, would complicate the regional nuclear scenario. In fact, Pakistan's nuclear assets at sea would be more vulnerable. Pakistan's stated "Credible Minimum Deterrence" posture, and the declaratory "weapons of last resort" ("no-early-first-use") policy will corroborate its aspired second strike capability only when its third leg of the triad is based on nuclear-powered SSBNs. In fact, only the sea-based nuclear deterrent force would be most suitable for Pakistan, like the British model, given its lack of strategic depth and small land mass. Britain has removed air-delivered weapons from service and relies exclusively now on SSBNs for nuclear deterrence. Can Pakistan afford to do the same?

Secondly, as far as the command and control issue is concerned, both countries would adopt the "bastion strategy," i.e. operating the SSBN close to their territorial waters within the protective envelop of their land- and sea-based firepower. Moreover, given the nascent status of their program, the submarines cannot perform truly autonomous operations in the near term. As India's nuclear deterrence is conditioned by the "China factor," gradually the third leg of its nuclear triad has to attain credibility vis-à-vis China – with trans-oceanic capabilities. This should not affect Pakistan's nuclear deterrence calculations mainly for the fact that India has already adhered to the NFU policy.

Thirdly, sea-based assets are viewed to "devalue the benefits to an adversary of a bolt-from-the-blue attack upon the land-based component of the force, usually sited in relatively static target sets." Therefore, it ensures invulnerability to inadvertent launch thereby fostering crisis stability.

Lastly, India's initiative for sea-based deterrent predates Pakistan's nuclear weapons program itself. *Arihant's* genesis can be traced back to

BARC and Indian Navy's joint study on naval nuclear propulsion in 1967. In the subsequent decades, constant prowling of Indian Ocean by nuclear submarines of the superpowers like US and China had raised India's concerns. Introduction of *Arihant* by India neither upsets nuclear stability in South Asia, nor does Pakistan's quest and current plan for sea-based deterrent address completely its vulnerability vis-à-vis India. However, the development is inevitable and both countries will learn to live with it.

Source: <http://southasianvoices.org>, 26 November 2014.

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OPINION – Evan Bayh and Judd Greg

Before We Close More Nuclear Power Plants, We Need A National Conversation

New England is about to get hit with huge electricity rate increases, job losses and more carbon emissions, a result of the Vermont Yankee nuclear plant's imminent closure. Make no mistake, the potential for these consequences to occur is not isolated to one region – all parts of the country should brace themselves if additional premature plant closures occur. In fact, a growing number of America's existing nuclear energy plants are at risk of shutting down. In 2013, four nuclear energy reactors from across the country announced their retirement, an unprecedented retrenchment for the nuclear industry. Others have indicated that they will follow suit if conditions do not improve, even though these plants have years of useful life left.

Such losses will be devastating because of the benefits that our existing nuclear energy plants provide to the nation. Existing nuclear plants produce 20% of our electricity, provide 100,000 well-paying jobs, contribute billions in local, state

Existing nuclear plants produce 20% of our electricity, provide 100,000 well-paying jobs, contribute billions in local, state and federal taxes, and make up 63% of our carbon-free energy. To put a finer point on it: due to Vermont Yankee's closure, 600 people across Vermont, New Hampshire and Massachusetts will lose their jobs.

and federal taxes, and make up 63% of our carbon-free energy. To put a finer point on it: due to Vermont Yankee's closure, 600 people across Vermont, New Hampshire and Massachusetts will lose their jobs. Not to mention that regulators are already scrambling to ensure that the energy from the Vermont Yankee unit is replaced, given that the plant produced 26% of New England's power during the peak of last year's frigid weather and helped prevent the emission of a million tons of carbon each year. And, due in part to Vermont Yankee's closure, some customers can expect rate increases of up to a staggering 50%.

Vermont Yankee is just one example of this national problem. The closure of the Kewaunee plant in Wisconsin and the San Onofre plant in California pose serious carbon emissions challenges for their host regions, among a number of other issues. The cause of the current malaise is due in large part to a perfect storm of economic and policy challenges, including sluggish demand for electricity, the onset of cheap natural gas, electricity markets that do not sufficiently value low- or zero-carbon electricity sources and an aging, constrained transmission system.

The reliability implications of premature nuclear energy plant closures alone should give us pause. During the Polar Vortex, nuclear energy plants outperformed all other sources of energy, operating at 95% capacity. So what was a close call this past January 2015 could mean blackouts in the future if parts of the country have to deal with severe weather conditions without nuclear energy plants. What might be done to ensure that existing nuclear energy plants are preserved? While different solutions may be called for in different regions, it is time to begin engaging in these discussions on a national scale so that we can ensure a diverse and secure energy future for America. To this end, we have laid out a framework of possible solutions that might be considered by policymakers.

First, markets should appropriately value existing nuclear energy plants for their reliability. Some organized competitive wholesale markets for power, in addition to energy markets that facilitate the buying, selling and delivery of electricity, have capacity markets that provide incentives to promote investment in maintaining existing generation and encouraging the development of new power facilities. The FERC, which is charged with oversight of wholesale electric markets, could approve changes to capacity markets that would ensure that only resources that can physically perform will bid into regional capacity markets, and thereby ensure that prices reflect the true cost of capacity.

Nuclear energy plants could be recognized for the fact that they emit no carbon. According to a recent study by the Brookings Institution, nuclear energy is the most cost-effective, zero-emission technology on the US electric grid. In fact, nuclear energy facilities prevent four times as much carbon dioxide per megawatt as wind; six times as much as solar arrays.

Second, electric transmission lines could better link nuclear energy plants to the markets that need their power. Transmission expansion in many places is difficult due to limitations on which projects can qualify as regional projects in RTO, as well as impediments in siting. Lack of transmission causes bottlenecks and impedes the ability of nuclear energy facilities to reach places where power is needed. State and federal policymakers

could facilitate the expansion of the grid in such places by ensuring that laws and regulations support development under these circumstances.

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A majority of states have RPS policies designed to increase generation of electricity from renewable resources. These policies require or encourage electricity producers within a given jurisdiction to supply a minimum share of their electricity from renewable resources. Generally,

these resources include wind, solar, geothermal, biomass and some types of hydroelectricity. An RPS provides a preference to such new renewables, leaving existing nuclear resources to compete on an uneven playing field. In lieu of an RPS, states could adopt CES that appropriately value the carbon-free nature of nuclear energy, or modify existing RPS to promote clean energy and its environmental benefits in a technology-neutral fashion.

This is especially timely as states contemplate how they will meet the EPA's recent draft rule to curb carbon emissions by 30% by 2030. The proposed rule's recognition of nuclear energy's attributes and its importance to state compliance is a positive development, but the closure of nuclear energy plants will make it difficult or impossible for states to comply with these rules. Discussions are already beginning on how best to preserve nuclear energy plants. We are hopeful that with continued dialogue and increased awareness of this issue, we can find the right solutions to help preserve this essential energy resource.

Source: <http://www.foxnews.com>, 17 November 2014.

OPINION – Siegfried S. Hecker

For US and Russia, Isolation can Lead to Nuclear Catastrophe

Moscow's announcement that no new joint Russian – US projects to secure nuclear materials in Russia are "envisioned" in 2015 came as no surprise. Over the past 10 years the Russian government has systematically terminated most cooperative threat reduction projects initiated after the collapse of the Soviet Union. Nuclear cooperation was born of

necessity because the political chaos and economic hardship endangered Soviet nuclear

assets, those in Russia and other former Soviet states.

A greatly weakened Russia was concerned about safe and secure dismantlement of its nuclear weapons, including those returning from Ukraine, Kazakhstan and Belarus. The nuclear enterprise was concerned about being able to pay its people and to retain the requisite expertise for its nuclear weapons. Washington was concerned about loose nukes, loose nuclear materials and potential brain drain of former Soviet weapons expertise to aspiring nuclear weapons states or non-state actors.

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Cooperative threat reduction was highly successful. Nothing really terrible happened in the Russian nuclear complex since the Soviet collapse. Threat reduction was not only cooperative, but it was highly collaborative. Hundreds of Russian and American nuclear weapons scientists and engineers worked hand in hand in each other's facilities to vastly improve Russian practices and technologies to

help them better secure and safeguard their enormous stocks of weapons-grade nuclear materials. They collaborated on how to ensure the safety and security of nuclear weapons in transport, storage and disassembly. They collaborated on how to strengthen nonproliferation and export control regimes and to prevent nuclear terrorism.

President Putin recently told an audience of young nuclear weapons scientists that times have changed – the Russian defense complex "has risen from the ashes like the proverbial Phoenix." In 49 trips to Russia since 1992, I have witnessed vast improvements in security and safety of Russia's nuclear assets. The nuclear weapons stewards are also better off than anytime in the past 30 years. Moscow's recent actions sent the message that the job in Russia's nuclear enterprise is done – no more need for American assistance, no more access for American

personnel. Moscow views cooperative threat reduction programs as a reminder of the humiliating 1990s.

My Russian colleagues are justly proud of the great nuclear safety and security improvements they made during difficult times. However, after two decades of close collaboration we all realize that nuclear safety and security are not a destination, but rather a journey that requires constant commitment to respond and adapt to changing threats, technologies and political environment. That is best accomplished through collaboration; that is, sharing best practices and lessons learnt, education and training, threat assessments, technology development, and emergency response.

Moscow is willing to collaborate in science and nuclear energy technologies, but is terminating bilateral security cooperation.

Washington wants to continue the latter, but in response to the Ukraine crisis, is isolating Russia from broader scientific and nuclear energy cooperation. The combined actions will diminish safety and security, as well as threaten nuclear cooperation in other key areas of common interest, such as countering nuclear terrorism and preventing nuclear proliferation. My Russian colleagues and I believe that in nuclear matters, collaboration is essential, whereas isolation can lead to catastrophes. It is important for both Moscow and Washington to heed this message.

Source: <http://www.nytimes.com>, 18 November 2014.

OPINION – Michael Brady Raap

The EPA Must Give Nuclear Energy Equal Consideration

There is no doubt that the Earth's climate has changed over the past 50 years, and it is clear that humans have contributed to the accumulation of greenhouse gases. While the science of climate change is evolving, the risks presented by rising temperatures around the globe are sufficiently large to justify enactment of policies at the national and international levels to reduce carbon emissions.

In mid November 2014, more than a thousand nuclear scientists and engineers from around the world are gathering at the American Nuclear Society's annual winter meeting in Anaheim, Calif., to discuss the many facets of nuclear as part of the foundation of clean energy. Our position is simple: nuclear energy is a solution in

providing a sustainable, secure energy supply while reducing the nation's carbon footprint. This role needs to be recognized by key decision-makers such as the EPA.

The best way to achieve lower greenhouse gas emissions would be through comprehensive legislation that is performance based and technology neutral. However, Congress is clearly not ready to act, and so the EPA has moved forward administratively with its proposed "Clean Power Plan Rule," which seeks to achieve a 30% reduction in carbon emissions from the US electricity sector by 2030. The EPA proposal is laudable in many respects, but it needs significant adjustment before

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it is enacted. Simply put, the rule fails to fully take into account the role nuclear energy plays in delivering large amounts of reliable, economically competitive electricity with no carbon emissions during reactor operations. In fact, the rule as it is currently structured almost entirely discounts more than 90% of the clean energy contributions from our existing nuclear energy facilities.

It's clear that when nuclear is removed from the energy mix, there are consequences for the environment. A recent study conducted by scientists at the University of California-Berkeley found that the shutdown of the San Onofre nuclear plant in 2012 increased carbon emissions by 9 million tons during the first 12 months, which is the equivalent of adding 2 million cars to the road. If more nuclear plants go offline, these negative environmental impacts will become more pronounced across the nation.

The Bottom Line: If we are serious as a nation about reducing carbon emissions, nuclear energy must be part of the solution and considered on an equal playing field with other non-emitting energy technologies such as solar and wind. The public agrees. According to a recent public opinion poll conducted by Bisconti Research, Inc., an overwhelming majority of Americans believes the United States should utilize all low-carbon electricity sources. When asked which energy source provides the most electricity, the study revealed that Americans correctly identified nuclear, since it is the only clean-air source of energy that produces electricity 24 hours a day.

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Nuclear security has since remained at the centre of post-Cold War cooperation between the US and Russia over these past two decades – till that cooperation was given severe body blows by the chill that has set in the relations between Putin's Russia and the West. While the immediate root of this frosty development lies in Ukraine and Crimea, the President Putin's Sochi speech in October 2014 seemed to lay down a new manifesto for a Cold War redux.

With nuclear energy playing a significant role in our energy mix, the United States will ensure it has access to large amounts of clean, base load electricity essential for the sustainability of modern industrial societies. America's nuclear professionals are not asking for government handouts or special treatment.

We are simply asking for "nuclear equality" – the opportunity to compete on a fair and equal basis with all forms of carbon-free energy generation.

Source: <http://www.rollcall.com>, 19 November 2014.

OPINION – Sheel Kant Sharma

US-Russia and Global Nuclear Security: Under A Frosty Spell?

It is twenty years since acute concern about unauthorised and malevolent access to sensitive nuclear material and radioactive substances, particularly from successor states to the former Soviet Union, roused the international community in 1994. Nuclear security has since remained at

the centre of post-Cold War cooperation between the US and Russia over these past two decades – till that cooperation was given severe body blows by the chill that has set in the relations between Putin's Russia and the West. While the immediate root of this frosty development lies in Ukraine and Crimea, the President Putin's Sochi speech in October 2014 seemed to lay down a new manifesto for a Cold War redux. The APEC summit in China and the G20 meeting in Australia in early November 2014 failed to dispel the frost and, on the contrary, hardened it as the

Russian president was cold shouldered and treated with concerted tough talk by his Western interlocutors.

Even prior to these summits Russia had put an end to the twenty year process begun by the famous Nunn-Lugar team in the US to salvage nuclear material, technology and installations in Russia and its CIS, as Moscow used to describe them. This programme championed by the Nunn-Lugar team has been a success story that now risks being burnt up by the exacerbating diplomatic fracas with Russia. Even someone as committed to the transformation of East-West relations as Gorbachev has voiced fears about a renewed Cold War.

The NSS process which has been the high point of Barack Obama's presidency, and supported widely by 59 states, is not spared anymore by an irate Russia which has advised US and all concerned that it would only work for nuclear security within the IAEA framework. Russia announced it would not join the Sherpas' meetings for the next NSS which is going to be hosted by US in 2016. There has been in addition a whole slew of international initiatives geared to securing nuclear materials, facilities and the enterprise in general from threats of terrorism. In all of these Russia had been an active and willing partner. Since its nuclear enterprise remains vast and as diversified as that of the US it is hard to visualise the future of all those initiatives without a well disposed Russia.

Fear of nuclear terrorism has gone up a few more notches in the past year due to the unmitigated horrors disseminated by the self-proclaimed Islamic State in Syria and Iraq and its propensity to stop at nothing. Among the elaborate action

points deliberated and recommended by the Nuclear Security Summits so far, not all are limited to the IAEA even though its centrality has been progressively underscored. The principal requirement in grappling with threats to nuclear security is the combined unbroken pressure from moral, diplomatic, civil society and legal angles. The existing legal instruments and the Security Council edicts are still in the formative stage of enforcement. Undiminished support and cooperation of all major countries with nuclear materials and technology is the sine qua non. It remains to be seen how Russia will play ball in diverse forums.

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There have been critiques of the post-Cold War world order, some of them quite harsh too, but to leverage such critiques to a particular situation of conflict and tension, it is important not to throw the baby out with the bathwater. This applies to both sides of the tense situation in Ukraine just as it does to the ongoing talks about Iran's nuclear future. A relapse to a Cold War-like division of the world would benefit no one just as it did not help even during the heady years of the last Cold War. Neither the triumphalism that marked the 1990s nor a panicked reassertion of destructive power as witnessed in recent months

can help in stabilising international nuclear diplomacy, be that in regard to non-proliferation or strategic arms reduction or nuclear security. The edifice created over the past two decades in regard to each of these spheres merits preserving.

Absence of negotiated agreements has also presaged a host of sub-legal or voluntary arrangements to fix the problems posed by inadequate controls on nuclear material – these voluntary arrangements ought not to be interrupted in pique or partisan parsimony as in

budget cuts in the US Congress on valuable nuclear security programmes. As regards the centrality of the IAEA, that has also been a result of the growing common understanding about a range of voluntary steps that have been generally supported over the past two decades such as peer reviews, advisory services or collation of related data banks or coordination of intelligence and forensics among different organisations.

As regards the centrality of the IAEA, that has also been a result of the growing common understanding about a range of voluntary steps that have been generally supported over the past two decades such as peer reviews, advisory services or collation of related data banks or coordination of intelligence and forensics among different organisations.

PM Modi stated in Canberra in November 2014 that we do not "have the luxury to choose who we work with and who we don't." This sentiment remains key to strengthening and sustaining a norms-based order to cope with new age threats like nuclear terrorism. The GICNT and the ICSANT are two significant examples in this regard. The entry into force of the 2005 Amendment to the CPPNM can be a big step forward where cooperation of major players remains crucial. It is to be hoped that the tough talk possibly conceals quiet diplomacy to restore balance and stability in great power relations and pave the way forward. Until there is progress in that direction a climate of suspicion is unlikely to help global endeavour towards greater nuclear security.

Source: <http://www.eurasiareview.com>, 20 November 2014.

NUCLEAR STRATEGY

INDIA

India on November 14 2014, successfully test-fired its nuclear-capable Dhanush ballistic missile from

a naval ship off the Odisha coast. The surface-to-surface Dhanush, a naval variant of India's indigenously-developed 'Prithvi' missile, was test fired from a ship in the Bay of Bengal at around 7.40 PM by the SFC of the defence force. Director of the ITR, MVKV Prasad said, "[t]he missile launch was part of an exercise by the armed forces and the missile reached the designated target with high precision," "The missile launch and its flight performance was monitored from the ITR at Chandipur, Odisha." 'Prithvi-II' surface-to-surface missile, which has a strike range of 350 km, was also test-fired from a test range at Chandipur earlier in the day.

The single-stage, liquid-propelled Dhanush has already been inducted into the armed services and is one of the five missiles developed by the DRDO under the IGMDP. "The trial was conducted by the SFC of the Indian defence force in co-operation with DRDO." Dhanush missile is capable of carrying conventional as well as nuclear payload of 500 to 1,000 kg and hit both land and sea-based targets.

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Source: <http://articles.economictimes.indiatimes.com>, 14 November 2014.

ISRAEL

Cornered but Unbound by Nuclear Pact, Israel Reconsiders Military Action against Iran

Historic negotiations with Iran will reach an inflection point on November 24, 2014, as world powers seek to clinch a comprehensive deal that will, to their satisfaction, end concerns over the nature of its vast, decade-old nuclear program.

But reflecting on the deal under discussion with *The Jerusalem Post*, Israel has issued a stark, public warning to its allies with a clear argument: Current proposals guarantee the perpetuation of a crisis, backing Israel into a corner from which military force against Iran provides the only logical exit.

The Deal on the Table: World powers have presented Iran with an accord that would restrict its nuclear program for roughly ten years and cap its ability to produce fissile material for a weapon during that time to a minimum nine-month additional period, from the current three months. Should Tehran agree, the deal may rely on Russia to convert Iran's current uranium stockpile into fuel rods for peaceful use. The proposal would also include an inspection regime that would attempt to follow the program's entire supply chain, from the mining of raw material to the syphoning of that material to various nuclear facilities across Iran.

Israel's leaders believe the best of a worst-case scenario, should that deal be reached, is for inspections to go perfectly and for Iran to choose to abide by the deal for the entire decade-long period. But "our intelligence agencies are not perfect," an Israeli official said. ... On November 22 2014 afternoon, reports from Vienna suggested the P5+1 are willing to stop short of demanding full disclosure of any secret weapon work by Tehran. Speaking to the *Post*, a senior US official rejected concern over limited surveillance capabilities, during or after a deal. ...

Should Tehran agree, the deal may rely on Russia to convert Iran's current uranium stockpile into fuel rods for peaceful use. The proposal would also include an inspection regime that would attempt to follow the program's entire supply chain, from the mining of raw material to the syphoning of that material to various nuclear facilities across Iran.

But compounding Israel's fears, the proposal Jerusalem has seen shows that mass dismantlement of Iran's nuclear infrastructure – including the destruction, and not the mere warehousing, of its parts – is no longer on the table in Vienna. "Iran's not being asked to dismantle the nuclear infrastructure," the Israeli official said, having seen the proposal before the weekend. "Right now what they're talking about is something very different. They're talking about Ayatollah Khamenei allowing the P5+1 to save face."

But compounding Israel's fears, the proposal Jerusalem has seen shows that mass dismantlement of Iran's nuclear infrastructure – including the destruction, and not the mere warehousing, of its parts – is no longer on the table in Vienna. "Iran's not being asked to dismantle the nuclear infrastructure," the Israeli official said, having seen the proposal before the weekend. "Right now what they're talking about is something very different. They're talking about Ayatollah Khamenei allowing the P5+1 to save face."

Officials in the Netanyahu government are satisfied that their ideas and concerns have been given a fair hearing by their American counterparts. They praise the US for granting Israel unprecedented visibility into the process. But while those discussions may have affected the talks at the margins, large gaps – on whether to grant Iran the right to enrich uranium, or allow it to keep much of its infrastructure – have remained largely unaddressed. ...

'Sunset Clause': Yet, more than any single enforcement standard or cap included in the deal, Israel believes the Achilles' heel of the proposed agreement is its definitive end date – the sunset clause. "You've not dismantled the infrastructure, you've basically tried to put limits that you think are going to be monitored by inspectors and intelligence," said the official, "and then after this period of time, Iran is basically free to do whatever it wants."

The Obama administration also rejects this claim. By e-mail, the senior US administration

official said that, "following successful implementation of the final step of the comprehensive solution for its duration, the Iranian nuclear program will be treated in the same manner as that of any non-nuclear weapon state party to the NPT – with an emphasis on non-nuclear weapon."

... Israel and world powers seek to maximize the amount of time they would have to identify non-compliance from a nuclear deal, should Iran choose to defy its tenets and build a bomb. But in the deal under discussion in Vienna, Iran would be able to comply with international standards for a decade and, from Israel's perspective, then walk, not sneak, into the nuclear club. "You've not only created a deal that leaves Iran as a threshold nuclear power today, because they

have the capability to break out quickly if they wanted to," the Israeli official contended. "But you've also legitimized Iran as a military nuclear power in the future." From the moment this deal is clinched, Israel fears it will guarantee Iran as a military nuclear power. There will be no off ramp, because Iran's reentry into the international community will be fixed, a fait accompli, by the very powers trying to contain it.

Revisiting the Use of Force:

Without an exit ramp, Israel insists its hands will not be tied by an agreement reached...should it contain a clause that ultimately normalizes Iran's home-grown enrichment program. On the surface, its leadership dismisses fears that Israel will be punished or delegitimized if it disrupts an historic, international deal on the

Without an exit ramp, Israel insists its hands will not be tied by an agreement reached...should it contain a clause that ultimately normalizes Iran's home-grown enrichment program. On the surface, its leadership dismisses fears that Israel will be punished or delegitimized if it disrupts an historic, international deal on the nuclear program with unilateral military action against its infrastructure. By framing the deal as fundamentally flawed, regardless of its enforcement, Israel is telling the world that it will not wait to see whether inspectors do their jobs as ordered.

Chief of Naval Staff Admiral Muhammad Zakullah, who witnessed the launch, congratulated the scientists and engineers for their dedication, professionalism and commitment towards achieving Pakistan's Full Spectrum Credible Minimum Deterrence Capability.

nuclear program with unilateral military action against its infrastructure. By framing the deal as fundamentally flawed, regardless of its enforcement, Israel is telling the world that it will not wait to see whether inspectors do their jobs as ordered. ... According to his aides, the PM's preference is not war, but the continuation of a tight sanctions regime on Iran's economy coupled with a credible threat of military force. Netanyahu believes more time under duress would have led to an acceptable deal. But that opportunity, in his mind, may now be lost. ...

Source: <http://www.jpost.com>, 22 November 2014.

PAKISTAN

Pakistan Successfully Tests Hatf-IV Missile

Pakistan on November 17, 2014, conducted successful test-launch of intermediate range Shaheen-1A (Hatf-IV) ballistic missile which is capable of carrying nuclear and conventional warheads to a range of 900 kms. The launch was aimed at revalidating various design and technical parameters of the weapon system. According to ISPR, Shaheen-1A with its highly accurate and indigenously-developed guidance system is one of the most accurate missile systems.

Chief of Naval Staff Admiral Muhammad Zakullah, who witnessed the launch, congratulated the scientists and engineers for their dedication, professionalism and commitment towards achieving Pakistan's Full Spectrum Credible Minimum Deterrence

Capability. He reiterated Pakistan's desire for peaceful co-existence in the region.

The naval chief appreciated the professional attributes of all concerned towards accomplishment of the sacred mission. He showed his full confidence in armed forces' capability to safeguard security of the motherland against any aggression. The successful test-launch was also warmly appreciated by the president and the PM of Pakistan who congratulated the participating troops, the scientists and engineers on their outstanding achievement.

The launch, with impact point in the Arabian Sea, was also witnessed by SPD Director General Lt-Gen Zubair Mahmood Hayat, Commander Army SFC Lt-Gen Obaid Ullah Khan, Vice Admiral Zafar Mehmood Abbasi, Commander Pakistan Fleet, NESCOM Chairman Muhammad Irfan Burney, senior officers from the strategic forces, scientists and engineers of strategic organisations.

Source: <http://nation.com.pk>, 18 November 2014.

RUSSIA

Russia Shocks US with Tactical Weapons, Pentagon Retaliates

Russia is in possession of strategic nuclear weapons far more advance than the USA, and it will continue to lead the game with its new generation of missiles, according to a comprehensive report from the Russian political newspaper, PRAVDA. Indeed, if World War 3 erupts, Russian Vladimir Putin will win hands down, the report suggested. The report titled Russia Prepares Nuclear Surprise For NATO, claims that Russia was able to amass its massive nuclear power because the US had been dismissive and neglectful of achieving innovations in decades after winning the Cold War.

Specifically, the US had closed the possibility of developing high-precision long-range weapons

that could eradicate enemies even without coming to direct contact. But Russia never stops innovating despite much criticism and the more accepted notion that the country is weak and the west is superior. At this point, Russia has "long-range cruise missiles of a new generation that will soon be deployed on submarines of the Black Sea Fleet and missile ships of the Caspian Flotilla." And not only that – Russia's tactical nuclear weapons are far more superior to that of NATO's, the report said. NATO's member countries have

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only 260 tactical weapons. The US has 200 bombs with an overall capacity of 18 megatons – located in Germany, Italy, Belgium, the Netherlands and Turkey. France has 60 atomic bombs, as outlined by the report. The report also highlighted that "Russia, according to conservative estimates, has 5,000 pieces of different classes" of tactical nuclear weapons "from Iskander

warheads to torpedo, aerial and artillery warheads."

The report seemed to have solid basis. Russia's plans of sending long-range bombers to the Gulf of Mexico are being widely reported. Defence Minister Sergey Shoigu declared that Russia has to maintain its military presence in the western Atlantic and eastern Pacific, including the Caribbean and the Gulf of Mexico. This included sending long-range bombers as part of the drills. Russia will also be sending more troops in Crimea. Shoigu noted that the deployments are in response to the "fomentation of anti-Russian moods on the part of NATO and reinforcement of foreign military presence next to our border." US officials did not buy the idea that Russia has the capability of deploying long-range bombers. A source had reportedly told CNN that the US found no security threat proving that such bold and destructive activity is happening. US State Department spokeswoman Jen Psaki echoed the same opinion.

However, Pentagon retaliates with Defence Secretary Chuck Hagel announcing a proposal of an additional \$1.5 billion to the \$15 billion a year worth of maintenance to US' nuclear arsenals. He admitted that US Air Force and Navy were beleaguered with scandals over the years. These scandals resulted to the neglect of the country's nuclear programmes, rendering some infrastructure outdated and maintenance deteriorated....

Source: <http://au.ibtimes.com>, 15 November, 2014

Bulava Gets Its Mojo Back

The latest Russian SLBM design, the Bulava (also known as R-30 3M30 and SS-NX-30) had another successful test in late October 2014. This last test was the first one in which the SSBN went to sea with all 16 silos loaded with Bulavas. The missile that was used not only launched successfully but all six warheads hit their designated target areas 8,000 kms distant. This was the second successful Bulava test in two months. It is now believed that Bulava will finally be cleared for mass production and acceptance into regular service in 2015.

Over the last few years Bulava was almost cancelled several times because test flights kept failing. But the government believes there was no better option than to keep trying to make Bulava work. For over a year now the design and manufacturing process of the Bulava has been scrutinized and tweaked. For example, a failed test in September 2013 was traced to incorrectly manufactured engine nozzles. The manufacturing and inspection process was fixed and the nozzles were replaced in the three remaining Bulava's from that batch. By late 2013 it was believed that the Bulava design was sound but that there continued to be problems with manufacturing components correctly and that current quality

control measures were not catching the flaws. So five more test launches were scheduled for 2014, and as many more as needed after that. As a result 89% of the last nine tests have succeeded. Overall success rate is now 68% (for 22 tests).

The Russians are setting the bar low for SLBM reliability, but they have little choice. The alternatives to Bulava are worse. They would like to get Bulava into service so they can get their two new Borei SSBNs into service and move ahead with construction of six more Boreis. If the Bulava

The Russians are setting the bar low for SLBM reliability, but they have little choice. The alternatives to Bulava are worse. They would like to get Bulava into service so they can get their two new Borei SSBNs into service and move ahead with construction of six more Boreis. If the Bulava reliability problems are solved, then eventually the success rate for test firings would be over 80%.

reliability problems are solved, then eventually the success rate for test firings would be over 80%. While great for the Russians, this would be considered a failure for the United States. For example, test firings of production models of the US Navy Trident II SLBM have never failed. Trident II is the standard SLBM for US SSBNs. There have been 143 of these missile launches, which involve an SSBN firing one of their Trident IIs, with the nuclear warhead replaced by one of

similar weight but containing sensors and communications equipment. The test results for the Trident while in development were equally impressive, with 87% successful (in 23 development tests) for the Trident I and 98% (49 tests) of the Trident II. The Trident I served from 1979-2005, while the Trident II entered service in 1990.

Initially it was believed that Bulava had a chance of being like the Trident. Bulava was declared to have successfully completed its test program on December 23rd, 2011. The last two launches in 2011 make five in a row that were successfully fired. As a result of this, the Bulava has been accepted into service, with a development test firing success rate of 63 percent. But there were still problems to be worked out and more test firings were conducted in 2012 and 2013. This is where the launch failures began happening again. But additional test launches revealed more

manufacturing problems. By 2013 there had only been 12 successful Bulava test firings out of 19 attempts. Back in 2100 Russia announced that its SSBNs would resume long range "combat patrols" by 2013.

On schedule, the Russian Navy finally accepted its first new Borei class SSBN (Yury Dolgoruky) for service on December 30th 2012. Thus, it appeared that the newly commissioned Yury Dolgoruky would be the first Russian SSBN in many years to make a long range cruise, as soon as it has a working SLBM to arm it. That did not happen and the resumption of SSBN combat patrols has been delayed until the Bulava is working reliably. Meanwhile, Russia has twelve Delta IV SSBNs, which are overdue for retirement and rarely go to sea at all, much less make long range cruises. The 45 ton Bulava SLBM is a little shorter than the Topol M it is based on, so that it could fit into the sub's missile tubes....

The new Borei class subs are the first new Russian SSBN to enter service and the first new Russian sub design since the end of the Cold War. Two Boreis are completed, fueled and crewed. They are waiting for their SLBMs. The Boreis are similar in design to the older Delta IVs. The Boreis are 558 feet (170m) long and 42 feet (13m) in diameter. Surface displacement is 15,000 tons, and 16 Bulava SLBMs are carried. Work on the first one, the Yuri Dolgoruky, was delayed for several years because the first missile being designed for it did not work out. A successful land based missile, the Topol-M, was quickly modified for submarine use. This "Bulava" was a larger missile, cutting the Boreis capacity from 20 to 16 missiles. The boat also has four torpedo tubes, and twelve torpedoes or torpedo tube launched missiles. The Borei also sports a huge sonar dome in the bow.

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The Boreis have a crew of 107, with half of them being officers (a common Russian practice when it comes to high tech ships like nuclear subs). Each of these boats will cost at least two billion dollars. This high cost, by Russian standards, is partly because many factories that supplied parts for Russian subs were in parts of the Soviet Union that

are not now within the borders of present day Russia. So new factories had to be built. All components of the Boreis, and their missiles, will be built in Russia. A dozen (or eight) of these boats probably won't be completed for at least a decade.

Source: <http://www.strategypage.com>, 19 November 2014.

USA

US Nuclear Weapon Systems to Get 10% A Year Boost for 5 Years

US Defence Secretary Chuck Hagel ordered top-to-bottom changes in the management of the US nuclear arsenal on November 14, 2014, saying a lack of sustained attention and investment in the force caused it to "slowly back downhill." According to Hagel, Defence Department will boost spending on the nuclear forces by about 10% a year for the next 5 years – an increase of nearly \$10 billion – adding

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According to Hagel, "... a consistent lack of investment and support for [the US] nuclear forces over far too many years has left the [US] with too little margin to cope with mounting stresses." "The root cause has been a lack of sustained focus, attention, and resources, resulting in a pervasive sense that a career in

the nuclear enterprise offers too few opportunities for growth and advancement." Hagel ordered two reviews in February, 2014 – one by Pentagon officials and a second by outside experts – as a result of a series of Associated Press stories that revealed lapses in leadership, morale, safety and security at the nation's three nuclear Air Force bases....

'Disconnect' in Chain of Command:

The reviews concluded that the structure of US nuclear forces is so incoherent that it cannot be properly managed in its current form, and that this problem explains why top-level officials often are unaware of trouble below them. The reviews found a "disconnect" between what nuclear force leaders say and what they deliver to lower-level troops who execute the missions in the field.

To illustrate the degree of decay in the ICBM force, the reviews found that maintenance crews had access to only one tool set required to tighten bolts on the warhead end of the Minuteman 3 missile, and that this single tool set was being used by crews at all three ICBM bases in North Dakota, Wyoming and Montana. When one crew needed it, they had asked the crew holding it to send it by Federal Express.

Four-star General to Head Nuclear Forces:

Among his more significant moves, Hagel authorized the Air Force to put a four-star general in charge of its nuclear forces. The top Air Force nuclear commander currently is a three-star. Lt. Gen. Stephen Wilson is responsible not only for the 450 Minuteman ICBMs but also the nuclear bomber force. Hagel has concluded that a four-star would be able to exert

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more influence within the Air Force and send a signal to the entire force that the mission is taken seriously, the defence officials said.

The review's authors, retired Air Force Gen. Larry D. Welch and retired Navy Adm. John C. Harvey Jr., found fault with one of the unique features of life in the nuclear forces. It is called the Personnel Reliability Program, designed to monitor the mental fitness of people to be entrusted with the world's deadliest weapons. Over time, that program has devolved into a burdensome administrative exercise that detracts from the

mission...Hagel ordered an overhaul.

Source: <http://www.cbc.ca>, 14 November 2014.

BALLISTIC MISSILE DEFENCE

INDIA

Akash Missile Successfully Test Fired for Second Day

...India on November 18 2014, successfully test-fired its indigenously developed surface-to-air 'Akash' missile from a test range in Odisha as part of user trial by the air force. The trial of the missile was 'fully successful', said ITR director MVKV Prasad adding it hit a para-barrel target. The test-fire was a practice and evaluation trial for a new squadron and a repeat performance as the medium range missile had been test-fired successfully on November 17 2014 from the same test range.

Akash' missile is a medium range surface-to-air anti-aircraft defence system with a strike range of 25 km and can carry a warhead of 60 kg. It has the capability to target aircraft up to 30 km away and is packed with a battery that can track and attack several targets simultaneously. With its capability to neutralise aerial targets like fighter jets, cruise missiles and air-to-surface missiles, defence experts compare 'Akash' to the similar weapons of many other advanced countries.

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up to 30 km away and is packed with a battery that can track and attack several targets simultaneously. With its capability to neutralise aerial targets like fighter jets, cruise missiles and air-to-surface missiles, defence experts compare 'Akash' to the similar weapons of many other advanced countries....'Akash' has been developed by DRDO as part of the IGMDP. While the air force version has already been inducted, the army version is in the final stage of induction....

Although the new Israeli Iron Dome system had succeeded, by 2012, in shooting down about 85% of the several hundred rockets (of 1,400 launched) headed for Israeli populated areas, this was a unique situation. Even continued success to the present has not made Iron Dome exportable because few other countries have a situation similar to the rocket threat against Israel.

Source: <http://indianexpress.com>, 18 November 2014.

USA

US Army Buys Iron Dome

The US Army has purchased an Iron Dome anti-rocket battery from Israel, mainly for evaluation purposes. The Americans want to see if Iron Dome would be worth getting for deployment in Iraq and Afghanistan, where American troops are still stationed and probably will be for some time to come. The American purchase was the first export sale of Iron Dome. Israeli efforts to export their Iron Dome anti-rocket system have otherwise failed so far, despite years of Iron Dome success in knocking down rockets under realistic combat conditions. The Israeli manufacturer of Iron Dome thought this would make Iron Dome a hot export item. After all, Israel is one of the top ten weapons exporters in the world. This is because Israeli stuff works well and is usually combat tested. But all that has not helped Iron Dome.

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The key to Iron Dome's success is its software. Iron Dome uses two radars to quickly calculate the trajectory of the incoming rocket and does nothing if the rocket trajectory indicates it is going to land in an uninhabited area. But if the computers predict a rocket coming down in an inhabited area, a Tamir guided missile is fired to intercept the rocket. This makes the system cost-effective.

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The main problem is that Iron Dome was designed to deal with an enemy that is a terrorist organization (Hamas) operating out of an area (Gaza) that is basically home for Palestinian refugees who have been there for over 60 years and want nothing less than the destruction of Israel. A similar

organization (Hezbollah) controls southern Lebanon and is also dedicated to the destruction of Israel, using 40,000 unguided rockets they received from Iran. This is the unique situation that Iron Dome was designed to deal with. There are some nations (South Korea in particular) that are threatened by unguided rockets fired from a neighbor. Actually, South Korea showed some interest in Iron Dome but there are few countries in a similar situation and South Korea has not expressed eagerness to place an order.

There's nothing special about most of the Iron Dome components. The Tamir missiles each weigh 90 kg (200 pound), are three meters (9.8 feet) long, and 160mm in diameter. They have the usual components of a guided missile (rocket motor, electronics, and mechanical devices to actuate the fins and batteries). Such interceptor missiles are increasingly

common, but usually against much faster ballistic missiles. Without the predictive software Iron Dome would quickly run out of missiles and be much more expensive to operate as well.

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nothing if the rocket trajectory indicates it is going to land in an uninhabited area. But if the computers predict a rocket coming down in an inhabited area, a Tamir guided missile is fired to intercept the rocket. This makes the system cost-effective. That's because most of these unguided rockets land in uninhabited areas but the few of those that do land in populated areas inflict casualties.

As of 2014 Israel has bought ten Iron Dome batteries and may obtain another five. Each of the Iron Dome batteries has radar and control equipment and three or four missile launchers (each containing twenty missiles). Each battery costs about \$50 million, which includes up to a hundred Tamir missiles. These cost \$90,000 each but would cost under \$50,000 each if produced in larger quantities. The US contributed nearly \$300 million for development of Iron Dome. Even with the American financial help Iron Dome is costing the manufacturer money because without export sales making a profit is difficult. Raising the price of the Iron Dome components is politically difficult and if the manufacturer has to eat the losses it weakens the financial health of several Israeli firms.

Sources: <https://www.strategypage.com>, 18 November 2014.

NUCLEAR ENERGY

CANADA

Canada Ships First Synchrotron Isotopes

The Medical Isotope Project uses the CLS particle accelerator to bombard a target of enriched molybdenum-100 (Mo-100) with high-energy X-rays, which knock a neutron out of some of the molybdenum atoms to produce Mo-99. Mo-99 decays to form technetium-99m (Tc-99m) the world's most widely used medical radioisotope. After the Mo-99 has decayed, the remaining Mo-100 is recovered and recycled into new targets. Tc-99m is employed in around 80% of nuclear

imaging procedures but as it decays very rapidly it is generated in hospitals from Mo-99 at the point of use. Mo-99 itself has a half-life of only 66 hours and cannot be stockpiled, and security of supply is a key concern.

Conventionally produced using uranium targets in research reactors, most of the world's supply comes from just 5 reactors in Belgium, Canada, the Netherlands, Russia and South Africa, and recent years have illustrated how unexpected shutdowns at any of those reactors can quickly lead to shortages. The need for a secure supply of Mo-99, as well as concerns over potential nuclear proliferation risks from the use of HEU targets in Mo-99 production in research reactors, has prompted various initiatives to develop non-reactor routes to commercial isotope production.

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Since 2010 the Canadian government has committed some CAD 60 million (\$53 million) of funds to research and development of non-reactor-based isotope production technologies through its Isotope Technology Acceleration Program. The MIP has been funded through ITAP and the Government of Saskatchewan, in partnership Manitoba-based not-for-profit corporation Prairie Isotope Production Enterprise. The MIP will continue to test the production of the isotopes until approval from national regulator Health Canada is obtained. The CLS and PIPE say they expect to become leading suppliers of isotopes to healthcare facilities across Western Canada and Northwest Ontario by 2016.

Canada's NRU research reactor currently produces 30-40% of the world's supply of Mo-99, but production is expected to cease in 2016 by which time the reactor will have been in operation for almost 60 years. According to CLS, two or three accelerator systems like the MIP facility could produce enough medical isotopes to supply Canada's domestic needs, and the partners say they intend to make the most of commercialization and spin off opportunities to export their

technology. The CLS announcement comes days after the US Department of Energy's NNSA announced \$8 million of funding to advance two projects aimed at securing non-HEU domestic supplies of the isotope.

Source: <http://www.world-nuclear-news.org>, 17 November 2014.

CHINA

China Plans for Nuclear Growth

China's nuclear generating

capacity is set to triple over the next six years, according to an energy development plan published by the State Council. The State Council published the *Energy Development Strategy Action Plan, 2014-2020* on 19 November 2014 which aims to cut China's reliance on coal and promote the use of clean energy. China currently has 19.1 GWe of installed nuclear generating capacity. According to the plan, this will reach 58 GWe of capacity by 2020, giving China the third largest nuclear generating capacity after the USA and France. In addition, by 2020, China should also have a further 30 GWe or more of new nuclear generating capacity under construction.

The plan calls for the "timely launch" of new nuclear power projects on China's eastern coast and for feasibility studies for the construction of inland plants. It says that efforts should be focused on promoting the use of large pressurized water reactors (including the AP1000 and CAP1400 designs), HTRs and fast reactors. The plan also says that research should be conducted into fuel reprocessing technology. In addition, it calls for the active promotion of basic research into nuclear power and the research and development of nuclear safety technology. It also

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Fast reactors – make maximum use of uranium resources by generating a certain amount more fuel than they consume – are seen as the main technology for China's long-term use of nuclear energy.

says that research should be conducted to "improve the nuclear fuel cycle system."

Fast reactors – make maximum use of uranium resources by generating a certain amount more fuel than they consume – are seen as the main technology for China's long-term use of nuclear energy. Under previously announced plans, deployment of PWRs is expected to level off at 200 GWe by around 2040, with the use of fast reactors progressively increasing from 2020 to at least 200 GWe by

2050 and 1400 GWe by 2100. The plan sets a cap on annual energy consumption at 4.8 billion tonnes of the standard coal equivalent by 2020. This would limit the annual growth rate of primary energy consumption to less than 3.5% per year over the next six years. Annual coal consumption will be held below 4.2 billion tonnes until 2020, the plan says. Its share of the energy mix will be reduced from the current 67% to 62% by 2020.

The plan places responsibility on areas around Beijing, the Yangtze River Delta and the Pearl River Delta to cut their coal consumption in order to reduce air pollution. The share of natural gas, meanwhile, will be raised to over 10%. Meanwhile, the share of non-fossil fuels in the total primary energy mix will increase from 9.8% in 2013 to 15%,

according to the plan. Installed capacity of hydro, wind and solar power is expected to reach 350 GWe, 200 GWe and 100 GWe, respectively, by 2020. In mid November 2014 China announced plans to achieve the peaking of CO2 emissions around 2030 and "to make best efforts to peak

early." It also intends to increase the share of non-fossil fuels in primary energy consumption to some 20% by 2030.

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

GENERAL

'Skunk Power' Creates Confusion over Nuclear Fusion

The advanced projects team at Lockheed, known as Skunk Works, has unveiled a plan to develop a compact, magnetic fusion device in less than a decade. The team believes they have found a new way of squeezing atoms together so they fuse and generate energy, in a small-scale magnetic device. As a result, they aim to build a reactor a 10th the size of current approaches. They argue that their device, which would fit on the back of a truck, could produce 100 MW of power and use just 25kg of fuel in a year. That would be enough to power a city with 80,000 homes. The aim is to have a prototype in 5 years and working model in 10.

Gassy Doughnuts: Our current method of getting energy from atoms involves splitting molecules, a difficult and dangerous operation that creates large amounts of radiation, and leaves behind significant quantities of radioactive waste. Fusion is a much neater idea – atoms are jammed together to release huge amounts of energy, with no danger of accidents or proliferating weapons. At the heart of magnetic fusion reactors is superhot, ionised plasma – a gas heated to at least 100 million degrees C. A critical element is how you contain this nuclear soup. The plasma normally circulates in a doughnut-shaped vessel, but if it touches the sides, it would quickly destroy the whole endeavour. It's said to be as difficult as keeping the Sun in a box – and as yet we have no idea how to build that box.

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What experts believe that Lockheed has done is to change the way that huge magnets are used to contain the gas. Called "cusp geometry", the arrangement produces an effect where the harder a particle struggles to move away from the gas, the harder the magnets work to keep it in line. Achieving this type of stability has been a major problem for most of the other approaches to fusion.

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A collaborative global experiment known as Iter is building a massive device, set to cost up to \$15bn but which won't be operative until the mid-2020s. At the moment all that has really been achieved is a large, expensive hole in the ground in the south of France.... Back in 1997, they managed to get 16MW of electricity from a fusion reaction, though they needed

24MW to make it happen. It still stands as the world's best effort when it comes to smashing atoms together.

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reaction, though they needed 24MW to make it happen. It still stands as the world's best effort when it comes to smashing atoms together. Like many experts in the field, those at Jet believe the Lockheed announcement is not a breakthrough but a lack of concrete information is frustrating the scientists....

The Iter Approach: As well as these magnetic approaches, others are using lasers to heat and compress the fuel so that

it initiates the fusion reaction. In late 2013, in California, researchers at the National Ignition Facility passed a critical milestone on this approach. There are dozens of others looking to make fusion work. Canada-based General Fusion uses liquid lead in its experiments; at MIT the preference is for levitation. The amazing potential for cheap energy, carbon and waste-free is enough to send shivers down your spine. But then again so was the cold fusion idea. This could suffer a similar fate.

...There is no data and even if the new magnetic geometry can contain the plasma, there are hundreds of hurdles before creating more energy than the device consumes.

According to Prof Cowley, perhaps in some areas of life, size does actually matter. ...The Jet project hopes to go further in the next few years and perhaps in 2017 or so it will get to "break even", the point where the amount of energy produced by the device is the same as the amount it takes to fire it up. That's a long way from fusion-powered planes as in the Lockheed idea. One problem for Jet could be a shortage of electricity, given the recent fire at Didcot Power Station.

Source: <http://www.bbc.com>, 17 November 2014.

NAM Reaffirms Countries' Right to Nuclear Energy

The NAM has reaffirmed the "undeniable right" of all countries to nuclear energy for peaceful purposes. According to Iran's Ambassador to the IAEA Reza Najafi, representing the 120-member NAM at a meeting of the IAEA Board of Governors on November 20, 2014, "The NAM

According to Iran's Ambassador to the IAEA Reza Najafi, representing the 120-member NAM at a meeting of the IAEA Board of Governors on November 20, 2014, "The NAM stresses the basic and undeniable right of all countries to developing, doing research on, producing and using nuclear energy for peaceful purposes without any form of discrimination and in accordance with their legal commitments."

stresses the basic and undeniable right of all countries to developing, doing research on, producing and using nuclear energy for peaceful purposes without any form of discrimination and in accordance with their legal commitments."

"Choices and decisions by countries, including... Iran, about the peaceful uses of nuclear technology and fuel cycle policies must be respected," Najafi said. He also said that "NAM strongly believes that all safeguards

and verification issues, including those pertaining to Iran, should be resolved within the IAEA framework and on the basis of technical and legal foundations." ... NAM, whose rotating presidency is held by Iran, stressed that a comprehensive solution to the standoff over Iran's nuclear energy program must be found through diplomacy and without any preconditions. ...

Source: <http://www.presstv.ir>, 21 November 2014.

The plant, having two units of 1,000 MW capacities each, is being set up with technical cooperation of Russia. The first unit could not start commercial operations by the earlier specified date of October 22, 2014 on account of certain technical problems. NPC submitted before the CERC that technical problem relating to the turbine would be resolved by December 22, 2014 and sought one month time "for eventualities" during the rectification work.

INDIA

Kudankulam Nuclear Power Plant to Start Commercial Ops by Jan 22

Commercial operations of the first 1,000 MW unit of Kudankulam nuclear power project is now expected to start by January 22, 2015, as an earlier deadline could not be met due to technical problems. The NPC, which is implementing the 2,000 MW plant, has received permission from the CERC for extending the deadline for commercial operation.

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cooperation of Russia. The first unit could not start commercial operations by the earlier specified date of October 22, 2014 on account of certain technical problems. NPC submitted before the CERC that technical problem relating to the turbine would be resolved by December 22, 2014 and sought one month time "for eventualities" during the rectification work.

Taking into consideration the technical problem, the regulator in an order dated November 10, 2014 has allowed NPC to inject infirm power into the grid for the commissioning tests including full load test of the first unit till January 22, 2015. Infirm power refers to supply that is not committed and mainly fed into the grid as part of testing purposes. At Unit-I, the first and second stage turbine blades and diaphragm have been damaged which are being replaced by taking from Unit-II, according to NPC.

Successful testing of reactor, turbine-generator, feed water pump system and the control and protection system of different transients are mandatory as per AERB, before declaring COD of the project....CERC has also asked the company to file a status report on rectification work carried out at the unit by December 30, 2014. NPC, after synchronised the unit into the grid on July 15, 2014 had earlier planned to start commercial operations in September, 2014. "However, while raising power, an increase in turbine thrust bearing temperature was observed and the temperature touched operational limit on reaching power level of 850 MW. "For attending to the technical problem, Turbine-Generator was taken off the bar and reactor was shut down on September 26, 2014." The turbine high pressure casing is being dismantled for carrying out inspection of the turbine and to identify the problem along with specialists of the turbine manufacturer from Russia.

Source: <http://www.thehindu.com>, 16 November 2014.

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VIETNAM

IAEA Reviews Vietnam's Nuclear Power Infrastructure Development

An IAEA mission reviewing Vietnam's nascent nuclear power programme found that the country implemented some of the Agency's earlier recommendations on siting, stakeholder involvement, environmental protection and industrial involvement, and that it is aware of what more needs to be done. The team of international experts, assembled at Vietnam's request by the IAEA to see how the recommendations from the INIR mission held in 2012 are being implemented, conducted a follow-up INIR mission from 10 to 14 November 2014.

"When we were here in 2012, we found that Viet Nam had many things to do to get ready for nuclear power," said Jong Kyun Park, INIR mission team leader and Director of the IAEA Division of Nuclear Power. "During our mission in mid November 2014, we saw that Vietnam is making progress. For example, we saw that there is now an approved national project on stakeholder involvement and many activities have been carried out in the last two years." "In other areas where we made recommendations in 2012," he added, "Vietnam has on-going activities or plans and has a good knowledge of what needs to be done." ...

Source: <http://www.iaea.org>, 18 November 2014.

NUCLEAR COOPERATION

BOLIVIA-FRANCE

France and Bolivia Sign Nuclear Energy Cooperation Pacts

Bolivia's Hydrocarbons and Energy Ministry said on November 19, 2014 that the country had signed letters of cooperation with France's Atomic Energy and Alternative Energies Commission. The letters

of intent cover nuclear technology.... The letters spell out intentions to establish a nuclear energy program in Bolivia and to work on "energy diversification." Bolivia's President Evo Morales announced recently that the country had ambitions to pursue a nuclear power facility in western Bolivia, specifying a call for a research reactor and a commercial power reactor targeted for the La Paz Province. The IAEA is on board. An IAEA representative visited Bolivia in mid November 2014 and confirmed the international watchdog would have a role in the country's nuclear development....

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Source: <http://nuclearstreet.com>, 20 November 2014.

INDIA-AUSTRALIA

Australian Uranium Shipments Planned for 2015 as India Ramps Up Nuclear Power

The uranium industry is hoping to make trial shipments to India in 2015 as the nation makes plans to move to 25% nuclear power by 2050. PMs Tony Abbott and Narendra Modi have discussed the supply of Australian uranium for India's nuclear power plants. It follows their signing of a safeguards agreement in New Delhi in September 2014, overturning a long-standing ban on uranium exports to the subcontinent. In his address to federal parliament on November 17, 2014, PM Modi said he saw Australia as a major partner in his country's quest to boost electricity production and address climate change.

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According to PM Abbot, "if all goes to plan, Australia will export uranium to India – under suitable safeguards of course – because cleaner energy is one of the most important contributions

that Australia can make to the wider world." The agreement is now being examined by the parliamentary treaties committee, which will close submissions on November 28, 2014. There are also talks between officials on administrative arrangements. Both the treaties process and the administrative arrangements must be

finalised before Australian uranium producers can start exports to India. Minerals Council uranium spokesman Daniel Zavattiero said the industry expected to start shipments by 2015.... Initial sales are expected to start on a small scale, but the outlook is strong.

The International Energy Agency estimates that while nuclear provides 3% of India's power today, it will grow to 12% by 2030 and 25% in 2050. India plans to invest \$96 billion in nuclear plants to 2040, with 21 operating now, six under construction and 57 planned or proposed. ...The agreement stipulates India must only use the uranium for peaceful purposes that adhere to recognised international safety standards. ...

Source: <http://www.theage.com.au>, 18 November 2014.

INDIA-EU India, EU to Sign Civil Nuclear Pact by 2015

In a major step towards realising its nuclear ambitions, India is engaged in talks with the EU to sign a civil nuclear cooperation agreement and the deal is expected to be inked by 2015. According to EU's ambassador to India Joao Cravinho, "[a]n agreement is expected to be signed between India's department of atomic

energy and joint research centre of the EU. It will mostly focus on areas of research and energy." Cravinho said talks between the two sides are on and the agreement should be signed in 2015.

The deal would provide a major boost to India's efforts in getting an entry to the elite NSG, considering the clout of EU on the global platform. According to Cravinho, "there were concerns raised by few countries about signing an agreement because India is not a signatory of the [NPT], but a consensus has been reached now." Both the sides and countries within the EU are ironing out the differences over the "language" to be used in the draft. ...

(Source: <http://ibnlive.in.com>, 16 November 2014.)

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INDIA-USA

American Officials Put Up Hurdles, Try to Scuttle India-US Nuclear Deal

A newly constituted contact group on civil nuclear issues between India and the US will meet for the first time in December, 2014 almost three months after it was announced. While the focus of the talks may be on nuclear liability matters, India is facing fresh obstacles from the US nuclear establishment. The US is now demanding fresh bilateral safeguards to complete the final negotiations on the nuclear deal. These are in the nature of non-proliferation assurances, many of which have already been provided by India.

India and the US are yet to complete the administrative arrangements that are needed to operationalize the deal. This has taken over two years to complete, and despite a seemingly positive note from the Modi-Obama summit, Indians are hard put to find "problem-solvers"

within the US system. In fact, there is a distinct feeling in India that elements within the US administration really don't want the nuclear deal to succeed.

The Democrats in power now were at the vanguard of the opposition to the deal when it was being negotiated under a Republican administration. While this may not be the approach at the very top, it's becoming a regular feature among mid-level US officials, making progress on the deal increasingly tough. The upshot is that the delays Indians feel

are being deliberately built in, will have an adverse impact on US companies – Westinghouse and GE – seeking to build nuclear reactors in India.

It's not that the issues are not difficult to deal with. Certainly on the issue of nuclear liability, India has to do a lot of heavy lifting to make it

easier for Indian and foreign companies to invest in the nuclear energy sector. Moreover, getting a low enough price for nuclear power will be a challenge when commercial deals are negotiated. But the Indian negotiators say both countries are streets away from that space yet. Under the separation plan, India has voluntarily put barriers between its civilian and strategic programmes, with the

civilian sector under full IAEA safeguards. India added on the additional protocol with the IAEA, another layer of more intrusive verification. All of these are part of the India-US nuclear deal.

However, the US is now asking for fresh bilateral verifications, particularly on tracking of nuclear fuel through the entire cycle. This has posed fresh

The US is now demanding fresh bilateral safeguards to complete the final negotiations on the nuclear deal. These are in the nature of non-proliferation assurances, many of which have already been provided by India. India and the US are yet to complete the administrative arrangements that are needed to operationalize the deal.

hurdles in the nuclear deal. India is unwilling to go down this road, believing, correctly, that this would undermine an international institution like the IAEA, not to speak of opening the door to more unilateral action in the nuclear sphere by states. The Modi-Obama summit declared that India had completed the procedures necessary for joining the global non-proliferation regime of the four groups – Australia Group, Wassenaar Arrangement, MTCR and NSG. India would now want this process to be completed as soon as possible. Although this issue is not on the new bilateral Contact Group's agenda, India is likely to highlight the US presidential commitment in the nuclear deal about facilitating its entry into these non-proliferation regimes. When the green light flashes, India will be ready with a formal application. In the coming weeks, India is expected to push the Americans hard.

Source: <http://timesofindia.indiatimes.com>, 19 November 2014.

SAUDI ARABIA–EUROPE

Saudi Electricity Co. Considering 15 Percent Stake in Hinkley Point C

Saudi Electricity Co. is considering taking a stake of about 15% in the Hinkley Point C nuclear plant, which recently received the green light for construction by the European Commission. Saudi Electricity is the largest utility in the Gulf region. It took the initiative in an effort to secure 15 percent stake, as French power-corporation EDF is seeking further funding for the \$25.06 billion project.

Hinkley Point C is expected to provide UK with 7% of its

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electricity when it is completed. French power corporation EDF, slated to own 45-50%....Essentially, 15% is up for grabs. China General Nuclear Corporation and China National Nuclear Corporation are slated for a 30-40% share with French plant builder Areva holding 10%. The British government has helped

provoke interest in the project, which is key part of the country's strategy for reducing harmful CO2 emissions. The owners have been guaranteed a price of \$144.43 per megawatt hour for the first 35 years of operation.

Source: <http://nuclearstreet.com>, 19 November 2014.

NUCLEAR NON-PROLIFERATION

IRAN

Iran and US Close in on Historic Nuclear Deal at Vienna Talks

Several leading arms-control experts have argued that the residual obstacles are more political than substantial, determined by the need of President Barack Obama's administration and President Hassan Rouhani's reformist government in Iran to reassure conservatives at home, rather than by the actual requirements of Iran's nuclear energy programme or genuine nonproliferation concerns. There are also differences among the six-nation group involved in the negotiations with Iran. France has consistently been more opposed to nuclear concessions than the other five.

Iran, the US and other world powers meeting in Vienna in November 2014 are close to a historic, comprehensive agreement that could bring a permanent end to 12 years of deadlock over Iran's nuclear programme. With a deadline for the talks looming close, diplomats are converging on the Austrian capital for the last stretch of marathon negotiations beginning on November 18, 2014, with the outcome still in the balance. Compromises have been found on previously contentious issues, and detailed text for different versions of a final deal has been drafted. Some diplomats describe their work as 95% done, pending political decisions to be made in

national capitals over Iran's capacity to enrich uranium over the next few years, and the sequence in which international sanctions are lifted.

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The consequences of a collapse in the negotiations could be serious and rapid. The US Congress is poised to impose fresh sanctions on Iran, and after the Republican capture of the Senate in November's elections it will be hard for Obama to sustain a veto on new punitive measures. In response, hardliners in Tehran are likely to demand an end to the partial freeze on the Iranian programme negotiated in an interim agreement a year ago. Mutual escalation could quickly push the 12-year nuclear standoff back to the brink of war. Israel has repeatedly threatened to take military action if diplomacy fails to contain Iran's nuclear aspirations.

Given the high stakes, all sides at the Vienna talks will be extremely reluctant to break off negotiations if a complete

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Several nonproliferation specialists have also questioned the US-led insistence that Iran's "breakout capacity" (the time it would take it to make a warhead) is kept to a year. The guiding principle over nine months of talks on a comprehensive nuclear agreement has been that "nothing is solved until everything is solved", reflecting the intertwined nature of the issues.

agreement is not reached by 24 November, the deadline agreed in the interim deal, at Geneva in 2013. One option would be to announce a framework agreement, leaving gaps to be worked out later, or simply extend the talks. But neither option would be politically sustainable for long without proof of genuine progress. Congress is already sceptical of the talks, claiming Iran is playing for time....

Those outstanding obstacles, enrichment capacity and the sequence of sanctions relief, have long been the most politically charged and difficult issues on the table. The west is offering a temporary suspension of some US sanctions through a presidential waiver of measures imposed by Congress, along with the unfreezing of blocked Iranian assets around

the world. The lifting of major oil and banking sanctions would be left until later.

Tehran wants the permanent lifting of the major sanctions early in the lifetime of a deal, including those imposed by the UNSC. Iran has 19,000 centrifuges installed in two enrichment plants. Of those, 10,200 first-generation machines are in operation. The west would like that cut to fewer

than 4,000 (the limits are measured in overall capacity, so a smaller number of more advanced centrifuges would be allowed), with the aim that it would take Iran a year to amass enough fissile material for a warhead, if Tehran took the decision to make a weapon....

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kept to a year. The guiding principle over nine months of talks on a comprehensive nuclear agreement has been that “nothing is solved until everything is solved”, reflecting the intertwined nature of the issues. But sources close to the talks say several difficult problems are close to a solution.

- Lifetime of the deal – Iran originally wanted it to last no more than three years. The west wanted a 20-year deal. A likely compromise is in the eight- to 10-year range.
- Cooperation with an IAEA inquiry into alleged past Iranian development work on nuclear weapons – the IAEA would have to confirm full cooperation before the last major sanctions are lifted.
- Heavy water reactor being built in Arak, central Iran – this would be redesigned to produce less plutonium as a byproduct. Iran would undertake not to build a reprocessing facility for extracting plutonium.
- Underground enrichment site at Fordow – a small-scale research-and-development centre would be allowed under strict IAEA supervision
- Transparency – Iran would accept a permanent IAEA presence at its nuclear facilities, while the agency would be able to inspect undeclared sites for signs of nuclear activity and monitor centrifuge-making plants.

The negotiators could decide to bank those gains as the deadline looms, issuing a statement on progress while asking for more time for the remaining obstacles – but that may not be enough to convince conservatives in the US and Iran to accept an extension.

Source: <http://www.theguardian.com>, 16 November 2014.

NUCLEAR DISARMAMENT

NORTH KOREA

North Korea Ready to Resume Six Party Nuclear Talks, Russia Reports

North Korea is ready to resume international talks on its nuclear programs and to work on restoring

trade ties with South Korea, the Kremlin announced on November 20 2014 after meetings with a high-level official from Pyongyang. The proclamations appeared to be an attempt by the isolated and sanctioned government of President Vladimir Putin to cast Russia as a critical mediator in global security conflicts and recover Moscow’s role as regional power broker. Choe Ryong Hae, special envoy of North Korean leader Kim Jong Un, presented Putin with a letter from Kim that offered to restart the six-party nuclear negotiations that have been suspended for five years, Russian Foreign Minister Sergei Lavrov reported.

“An important factor in our joint efforts is strengthening confidence in Northeast Asia and the maintenance of peace and security on the Korean peninsula, and the creation of conditions for the resumption of six-party talks,” Lavrov told the Sputnik news agency after his talks with Choe. The diplomats discussed several

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proposed projects to ease tensions between the two Koreas, including work to reunite the north and south rail lines and to build pipelines and delivery routes for Russian gas and electricity across North Korean territory for South Korean consumers. Kim’s reported offer to restart the nuclear talks was said to be “without conditions,” but in

accordance with the forum’s September 2005 declaration of objectives. That included a pledge by Pyongyang to abandon all nuclear programs and abide by the NPT in exchange for energy and other assistance to North Korea and assurances from the United States that it had no plans to attack or invade.

North Korea conducted nuclear tests in 2006, 2009 and 2013 in violation of the nonproliferation treaty, which it hasn’t signed, as well as the 2005 declaration. The six-party talks – among North Korea, South Korea, China, Russia, Japan and the United States – were discontinued in 2009. On November 20 2014, analysts of the US-Korea Institute at Johns Hopkins University’s School of Advanced International Studies reported recent activity at North Korea’s Yongbyon Nuclear Scientific Research Center that they said could

signal an effort by Pyongyang to extract weapons-grade plutonium from spent fuel rods.

The Yongbyon facility has been shut down for more than 10 weeks, longer than necessary for routine maintenance, the North Korea-watchers reported. "While it is too soon to reach a definitive conclusion, new evidence is accumulating that suggests: 1) the shutdown may have allowed the North to remove a limited number of fuel rods, possibly failed, from the reactor; and 2) Pyongyang may be preparing to restart the Radiochemical Laboratory, which separates weapons-grade plutonium from waste products in spent nuclear fuel rods," the analysts said. Russia's Tass news agency also reported the US-Korea Institute findings based on recent satellite imagery, without commentary impugning its reliability. That might suggest that Russia, too, wants to strengthen the international community's influence over its rogue neighbor to deter its development of nuclear weapons....

Source: <http://www.latimes.com>, 20 November 2014.

NUCLEAR TERRORISM

GENERAL

Obama 'Would Order' US Troops into Combat if ISIS Got Nuclear Weapon

President Obama has been unwavering and definitive in declaring he will not deploy US ground troops into combat to fight ISIS militants. But for the first time since the start of then anti-ISIS offensive dubbed Operation Inherent Resolve, the President volunteered a scenario which he said would change his mind. Obama said,

President Obama has been unwavering and definitive in declaring he will not deploy US ground troops into combat to fight ISIS militants. But for the first time since the start of then anti-ISIS offensive dubbed Operation Inherent Resolve, the President volunteered a scenario which he said would change his mind. Obama said, "if we discovered that [ISIS] had gotten possession of a nuclear weapon, and we had to run an operation to get it out of their hands, then, yes."

"if we discovered that [ISIS] had gotten possession of a nuclear weapon, and we had to run an operation to get it out of their hands, then, yes,"..."I would order it." There is no indication that ISIS currently possesses or could easily obtain a nuclear weapon, officials say. Still, Obama's declaration of a nuclear weapon in the hands of ISIS is a noteworthy new "red line" – and a very high bar for a US offensive role on the ground....

Source:<http://abcnews.go.com>, 17 November 2014.

PAKISTAN

Pakistan Calls for Global Efforts to Combat Nuclear Terrorism

Addressing the third NSS here on November 17, 2014, PM Nawaz Sharif has said that Pakistan attaches highest importance to nuclear security as it is directly linked to our national security. He said Pakistan is a responsible nuclear weapons state and it is pursuing a policy of nuclear restraint, as well as credible minimum deterrence. Nawaz Sharif said Pakistan's nuclear security is supported by five pillars—a strong command and control system led by the NCA; an integrated intelligence system; a rigorous regulatory regime; a comprehensive export control regime; and active international cooperation.

He said Pakistan's security regime covers physical protection, material control and accounting, border controls and radiological emergencies. The PM said our nuclear materials, facilities and assets are safe and secure. Pakistan's nuclear security regime is anchored in the principle of multi-layered defence for the entire spectrum – insider, outsider or cyber threat, he

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said. Nawaz Sharif said Pakistan has established a Centre of Excellence that conducts intense specialized courses in nuclear security, physical protection and personnel reliability.

Pakistan is ready to share its best practices and training facilities with other interested states in the region and beyond, he added. The PM said that Pakistan has also deployed radiation detection mechanisms at several exit and entry points to prevent illicit trafficking of radioactive and nuclear materials. In the realm of international cooperation on nuclear security, Nawaz Sharif said that IAEA has an essential responsibility and a central role to play. Pakistan has been working productively with the IAEA to implement its NSAP. He said Pakistan has been running a safe, secure and safeguarded civil nuclear programme for more than 40 years. It has the expertise, manpower and infrastructure to produce civil nuclear energy. The PM pointed out that energy deficit is one of the most serious crises facing Pakistan.

As the country revives its economy, it looks forward to international cooperation and assistance for nuclear energy under IAEA safeguards, he said. Nawaz Sharif called for Pakistan's inclusion in all international export control regimes, especially the NSG. He said international treaties and forums should supplement national actions to fortify nuclear security. He said Pakistan is a party to the Convention on the Physical Protection of Nuclear Material. It works closely with IAEA to deal with safety and security of radioactive sources and illicit trafficking of nuclear materials. It regularly submits reports to the UN Security Council 1540 Committee on the measure we take to exercise control over transfer of sensitive materials and technologies. The PM announced that Pakistan is considering ratification of the 2005 Amendment to the Convention on the Physical

Protection of Nuclear Material and is actively conducting a review to meet its various requirements....

Source: <http://dunyanews.tv>, 18 November 2014.

NUCLEAR SAFETY

NORTHEAST ASIA

OECD Calls for Regional Nuclear Safety Approach

Despite persistent territorial and historical tension, Northeast Asia needs to formulate a joint scheme to promote nuclear safety which will help preclude future disasters and boost practical cooperation, chief of the OECD's atomic energy agency said. William Magwood, director-general of the Nuclear Energy Agency of the OECD, stressed the growing need to jointly address safety issues in the wake of the 2011 Fukushima debacle in Japan, such as by cultivating a safety culture.

The former US nuclear regulatory commissioner was visiting Seoul to take part in the TRM+ on Nuclear Safety – an expanded version of the previous top regulators meeting between Korea, Japan

and China – to broaden cooperation with other key players such as the US, Russia and related multilateral organizations. It was launched in September as part of the Park Geun-hye administration's drive to foster trust among neighbors in nonpolitical areas. "I do believe that there are aspects of nuclear safety and technology that can be addressed on a regional basis," Magwood said at a news conference. ... Though little discussions have taken place on any possible framework, safety culture can be a good starting point given the cultural similarities among the three countries, he said. ... Tension persists, however, as Tokyo is at odds with Seoul and Beijing

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over islands in the East Sea and the East China Sea, respectively.

Source: <http://www.koreaherald.com/view.php?ud=20141125001114>, 25 November 2014.

SOUTH KOREA

Seoul to Host Forum on NE Asian Nuclear Safety

South Korea plans to host an international forum on nuclear safety next week to discuss ways to enhance safety in Northeast Asia, a region packed with nuclear power plants, Seoul's foreign ministry said Thursday. The symposium, to be held in Seoul on Wednesday, will bring together around 200 government officials from countries including China, Japan and Russia as well as experts in the private sector, the ministry said. The four-session forum will mainly discuss how to cope with institutional and organizational challenges to promote nuclear safety in the region, it added.

The move is in line with South Korean President Park Geun-hye's proposal to create a cooperative channel to promote nuclear safety in Northeast Asia. Park made the proposal during an address on Aug. 15, saying that the cooperative body, to be led by Seoul, Beijing and Tokyo, could also invite the participation of the US, Russia, North Korea and Mongolia. The envisioned meeting would be the second of its kind, expanding from annual discussions on nuclear issues among South Korea, China and Japan, which have been held since 2008. The first closed-door forum was held in Japan in September.

Source: <http://www.koreaherald.com>, 20 November 2014.

Fire at Kori Nuclear Power Plant Goes Undetected for Over an Hour

A fire occurred in the nuclear fuel storage facilities of the Kori Nuclear Power Plant located in Kijang County, Busan City, but none of the workers was aware of it for over an hour. According to the Korea Hydro & Nuclear Power Corporation, the fire occurred at 4:26 p.m., Nov. 11, at Kori Power Plant Unit 4, burning up a waste dryer along with some gloves and towels. It is assumed that the dryer

overheated and started the fire while drying wet gloves.

An employee, while looking around the site, detected smoke at 5:38 p.m. and extinguished the fire after 14 minutes. "One of the two smoke detectors is designed to be mute, and the other one sounded an alarm but the employees could not hear it," the corporation explained. The alarm was displayed in the main control center but the employees did not see or hear anything. The slow response to the fire is troubling, since the facility trained to fight them just this summer. ...

Source: Report by Jung Yeon-jin. <http://www.businesskorea.co.kr>, 19 November 2014.

UAE

UAE to Work on Nuclear Safety with Leading International Organization

The UAE is starting in-depth work with a major organisation in Vienna to improve its nuclear safety and security. Dr Lassina Zerbo, executive secretary of the Preparatory Commission for the CTBTO, whose goal is to prevent nuclear testing, visited the UAE this week to increase its work with the UAE. ... He said the organisation could participate and contribute to the UAE's search to develop meteorological, seismic, dust and radiation monitoring.

Dr Zerbo said the UAE was able to monitor such phenomena locally and regionally. "But by accessing [our] network, you're getting the global picture," he said. "We were the only institution to show the international community that it took two weeks for the radiation to move from Japan to the rest of the world but, luckily, there was no health consequence. We could simulate it, though, and inform the population more specifically of these issues."

Dr Zerbo met with Sheikh Abdullah bin Zayed, UAE Foreign Minister, to discuss how the Emirates could help the organisation play its role in the national and regional context. "One should face the reality that the role the UAE has shown in adhering to all standards and treaties in nuclear safety and security is a good example we can

show the rest of the world," he said. "We want to materialise our work with the UAE and it's a matter of days now to connect the meteorological centre here with the one in Vienna to gather the wealth of information we have." He said the work would also involve training. "We will get educational workshops in nuclear monitoring," he said. "We invited [nuclear engineers] from Khalifa University to join the science and technology conference which takes place in June next year and happens every two years. It will connect them with 800 experts worldwide dealing with nuclear technology and monitoring."

Ambassador Hamad Alkaabi, the UAE permanent representative to the IAEA, said the organisation had developed a tremendous technological base that allowed it to detect and monitor nuclear tests. "...So what we're trying to establish is more cooperation in terms of getting the UAE to access this data network but, at the same time, to tap into some potential capacity-building for training in specialised fields in science and technology in detection and verification."

Source: Caline Malek, <http://www.thenational.ae>, 16 November 2014.

NUCLEAR WASTE MANAGEMENT

GERMANY

Government Doubles Nuclear Waste Count

Germany will have to dispose of twice as much radioactive waste as previously expected as it continues to shut down its nuclear power plants, according to parts of the government's disposal plan that were leaked on November 18 2014. According to reports, some 600,000 cubic metres of waste will have to be placed in permanent underground

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storage instead of the anticipated 298,000 cubic metres.

...The new projection is significantly higher because of the inclusion for the first time of 13,000 tons of waste from uranium enrichment, equivalent to around 100,000 cubic metres. The waste comes from a uranium enrichment plant at Gronau, near the Dutch border in North Rhine-Westphalia. Since the so-called uranium tails can be processed into nuclear fuel, the waste was previously excluded from the calculations for the overall total. Another 200,000 cubic metres of waste accumulated during the clearance of the Asse II shaft in Wolfenbüttel in Lower Saxony.

Low- and medium-level nuclear waste was stored in the former salt mine from 1967 to 1978 at a depth of 750 metres. Because of increasing seepage of groundwater into the shaft, the site's 126,000 drums must now be removed and their contents repacked in new containers and disposed of afresh. The Green Party welcomed the government's "honest inclusion" of the 100,000 cubic metres of waste from uranium enrichment....

Radioactive Skeletons in the Cupboard: According to Susanne Neubronner, a nuclear policy expert with the Greenpeace, "[i]t's not so much a step forward as simply shocking how the public was duped in the past." Moreover, the revision of the figures could just the start as more "skeletons in the cupboard" of sloppy waste handling over the decades are admitted or come to light. Energy

Low- and medium-level nuclear waste was stored in the former salt mine from 1967 to 1978 at a depth of 750 metres. Because of increasing seepage of groundwater into the shaft, the site's 126,000 drums must now be removed and their contents repacked in new containers and disposed of afresh.

companies are known in cases to have "packed the waste away and shut their eyes to it", Neubronner added. "Now is the time for companies to come clean about stored waste." Greenpeace was aware of the existence of 2,000 rusting and dilapidated barrels of radioactive waste that were stored underground and potentially pose a danger.

Still Waiting for the Dump

Site: The new designated storage site for the bulk of Germany's radioactive waste is the Konrad pit, an old iron ore mine located in Lower Saxony that is being converted for radioactive waste storage. Now two decades past deadline, Konrad will be used to store waste that generates less heat, according to the draft disposal plan. The government is due to locate and open a second storage site by 2031 at the earliest for almost 300 barrels of waste that generates more heat.

It is also not ruled out that the 'extra' 300,000 cubic metres of waste to be disposed of may go into an extension of the Konrad pit. But a decision on this will only be made in 2022, the earliest the delayed site is expected to open. Germany's nuclear waste management was complicated further when environmental authorities in Schleswig-Holstein

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Almost 200 nuclear power stations are due to be decommissioned worldwide by 2040, prompting expert warnings of similar problems in other countries where there are few facilities for disposing of the resultant radioactive waste.

announced in October 2014 that a third of barrels containing radioactive waste at a decommissioned nuclear plant are damaged. Vattenfall, the energy company which manages the Brunsbüttel site, reported that 102 of the 335 barrels stored underground here were corroded, leaking or had loose lids. Some containers are so deformed that they can no longer be moved. The Brunsbüttel site holds 631 barrels of waste in its six chambers, which have been used for this purpose since 1979. The nuclear power plant was decommissioned in 2011. Almost 200 nuclear power stations are due to be decommissioned worldwide by 2040, prompting expert warnings of similar problems in other countries where there are few facilities for disposing of the resultant radioactive waste.

Source: <http://www.thelocal.de>, 18 November 2014.



Centre for Air Power Studies

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