



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

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## OPINION – Sitakanta Mishra

### Nuclear Tasks for the New Government

Though the Manmohan Singh-led UPA government brought momentum to India's civil nuclear programme, it could stride only half way through in some vital areas that the Narendra Modi-led NDA government ought to carry forward. Any policy reversal or putting them on the back-burner, especially in respect to nuclear agreements with several countries, regulatory reform, and rationalisation of liability regime, would damage India's 'responsible state' image, concurrently plunging the ascending nuclear energy production.

**Nuclear Vision:** With the civil nuclear agreement with US, the India-specific safeguards agreement with IAEA and the NSG waiver in 2008 to procure ENR technology and equipment, India has initiated civil nuclear cooperation with around two dozen countries and three dozen industrial houses. Currently, 21 nuclear power reactors are in operation producing around 5000 MW. Six reactors under construction are expected to generate an additional 4,800 MW, while another 33 are planned. Today nuclear energy constitutes around 3.6 per cent of the total electricity produced in the country and the vision is to install 20 GWe by 2020.

Uranium supplies from Canada, France, Kazakhstan, and Russia have helped Indian reactors to operate with high capacity. Nine reactors recorded an unprecedented 97 per cent capacity factor during 2011-12.

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With the imported uranium from France, the Kakrapar reactors recorded 99 per cent capacity factor during 2011-12. Meanwhile, nuclear power output has increased by over 80 per cent i.e. from 18,634 million units in 2006-07 to 35,333 million units during 2013-14. The Unit 1 reactor at KNPP has reached its full potential of 1,000 MW and expected to go commercial soon.

On 19 April 2014, India and Russia have signed a framework agreement for building the third and fourth units of the KNPP and the cost has worked out to Rs 33,000 crore (\$5.5 billion) reportedly, lower than the expected \$7 billion. An MoU has

been signed in for Early Work Agreement (EWA) between NPCIL and Westinghouse for Mithivirdi plant in Gujarat. Meanwhile, India and France have reportedly agreed on the cost of power that will be generated by JNPP in Maharashtra – Rs 6 per unit, down from Rs 9.18 per unit quoted by the French company Areva initially.

**National Energy Mix:** India ultimately aims to achieve a sustainable nuclear fuel cycle using its vast thorium reserves to produce sizable energy to contribute to the national energy mix. By a mix of indigenous PHWRs, FBRs, and LWRs with foreign technical cooperation. Beyond 2032, large expansion based on FBRs and later thorium-based reactors are envisioned. The 500MW Prototype FBR, first commercial nuclear reactor designed to generate more fuel than it burns, stationed in Kalpakkam, drives India closer towards harnessing its vast thorium reserves.

However, fuelling the existing and planned PHWRs and LWRs in the interim, keeping in mind the ambitious production target, exploration of domestic uranium reserves alongside proactive investment abroad should be prioritised. Beside the Jaduguda mine in Jharkhand, if the newly discovered abundant Uranium reserve in Tummalapalli of Andhra Pradesh and Domiasat in Meghalaya is viable for exploration, India can maintain its uranium-based reactors alongside the plutonium and thorium-driven fuel cycle.

**Shackled Within:** With the worldwide goodwill to partner with India in nuclear commerce, India's civil nuclear programme is at a take-off stage. The UPA government strived hard to unshackle India of the international technology embargo, but could not expedite nuclear energy expansion drive that is shackled within. Owing to pockets of resistance and non-cooperation by State governments new projects are in a hostage.

With the absence of coalition compulsions, the Modi-led NDA government can swipe the nuclear baton deftly. At the outset, to garner greater social acceptance of nuclear energy, a few prevailing uncertainties need urgent attention. For example, capability of renewable energy sources to meet India's future electricity needs, cost-effectiveness

of nuclear energy, and how safe and secure nuclear energy is.

A comprehensive study (2011-12) by SP Sukhatme of IIT Bombay concludes that renewable energy sources if stretched to their full potential can at best contribute 36 per cent of the total need of electricity during the next six decades; but alone cannot meet the future needs, to provide a desired per capita value of 1,840 kWh/yr. The intermittent nature of solar and wind energy, required heavy base-load power for the manufacturing sector to maintain high economic growth, and mounting energy requirement of residential, commercial and transportation sector combined necessitate leveraging of India's nuclear energy industry.

With fast construction timeframe, high plant load factor, long lifespan, and low fuel costs nuclear energy, even though capital intensive, is competitive. In India's case, nuclear energy is cheaper outside the coal belt and a viable option in terms of Long Range Marginal Cost (LRMC). If we take Tarapur-1 and 2 experiences, it has been found to

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have delivered for four decades cheapest electricity, the current tariff being about Rs 1/kWh. In addition, both primary and secondary economic benefits of nuclear projects for the local, state and national level are huge.

Nevertheless, each time a problem related to nuclear technology takes place anywhere, many draw baseless parallels to India's programme. In the process, the specificities and achievements of Indian

nuclear projects are overlooked. India has over 400 reactor years of commercial nuclear operation without any major safety-related accident. Its nuclear plants have survived tsunami and earthquake. Undoubtedly citizens have the legitimate right to raise their concerns and genuine concerns need to be addressed by the authorities; but the fact is that the world has no longer easy energy choices.

The question is "how much risk society is willing to accept to realise the promise of nuclear technology". By bridging the gap between the scientific community and the public, and bringing into light the benefits accrued over the years by the local communities around the existing nuclear facilities

the authorities will be able to dispel many thriving misperceptions. Creation of a Social Acceptance Committee can be a precursor to garner greater public support and act upon their grievances in a humane manner.

**Regulatory Reform:** In pursuit of bringing vitality to nuclear regulatory mechanism, the UPA government presented to the Parliament the NSRA Bill with recommendations of the Parliament Committee on Science & Technology and Environment, which is yet to be passed.

The Bill has proposed to establish the Council of Nuclear Safety to review policies on nuclear safety, but included the Chairman of the AEC as a member who also heads the DAE that controls nuclear plants. The new government must review the provisions of Bill to ensure independence of the regulatory mechanism (NSRA) from the promoting agency (DAE) and approve it as priority.

**Rationalising Liability:** India's Civil Liability for Nuclear Damage Act came under serious scrutiny in the wake of the proposal to sign the first commercial civil nuclear agreement with the USA in September last year. The BJP, then in Opposition, remarked any bypassing of operator's "right of recourse" in Clause 17 of the Act as "corruption", and Manmohan Singh's 'gift to American nuclear companies'. Yet, very few realise how uncannily the liability act, that holds nuclear suppliers liable for nuclear accidents, has stymied India's nuclear energy expansion drive. Though many countries have expressed willingness for civil nuclear business with India, not a single commercial contract for the import of reactors has been signed, except the Kudankulam 3 and 4 with Russia recently.

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Rationalisation of India's liability regime is desirable and possible by innovative reconciliation of concerns of various stakeholders. First, by having an institutional-procedural understanding with the suppliers Indian operators can provide timely feedback to the supplier on the wellbeing of a particular component or certify after a period of time the usage

of the component that it does not suffer from a "patent or latent defect". Second, find suitable insurance to the extent to cover probable risks involved. To add predictability to suppliers' obligations, liability can be limited to a certain reasonable time frame, like guarantee and warranty period. Lastly, consider creation of an American-style corpus to which the suppliers could be asked to

contribute.

Though the UPA government struggled to convince Japan and Australia for nuclear cooperation, could not ink deals with finally. Australia is the largest supplier of uranium and promising to meet India's requirements. An accord with Japan is requisite for reactor import as Japanese manufacturers supply crucial components used in the American and French reactors. Also, GE and Westinghouse are owned by Japanese companies Hitachi and Toshiba.

Making possible civil nuclear deals with Australia and Japan someday, and any move in pushing India's candidature for NSG would attest Modi government's nuclear diplomatic acumen.

**MODified Strategy:** The new government has to embark on the dual challenge of maximising benefits from the understandings with global partners while taking along the domestic public to achieve greater acceptance of new nuclear projects.

While carrying forward the UPA's nuclear spell in the immediate-term, capacity building of domestic industrial houses and diversification of India's nuclear industry can be planned in the long-term by implementing the joint ventures with partners like NTPC, Nalco, ONGC, Indian Railways, Indian Oil Corporation, SAIL, etc. Prime Minister Modi,

having experience in hosting nuclear project in Gujarat, is expected to bring more vitality to India's nuclear energy vision. Given the employment generation and energy security potential, Paramanu justly fits into Modi's pledge for Sabka Vikas.

Source: <http://www.tribuneindia.com/>, 20 June 2014.

**OPINION - G Parthasarthy**

**Our Exciting Nuclear Neighbours**

While explaining the rationale for Pakistan's nuclear programme, its former Prime Minister ZA Bhutto noted that while the Christian, Jewish and Hindu civilisations had nuclear weapons capabilities, it was the Islamic civilisation alone that did not possess nuclear weapons. He asserted that he would be remembered as the man who had provided the Islamic civilisation with "full nuclear capability".

Bhutto's views on Pakistan's nuclear weapons contributing to the capabilities of the Islamic civilisation were shared by Pakistan's senior nuclear scientist Sultan Bashiruddin Mehmood who, along with his colleague Chaudhri Abdul Majeed, was detained shortly after the terrorist strikes of 9/11. They were both charged with helping the al-Qaeda acquire nuclear and biological weapons capabilities.

**It all started with China**

The original sinner in nuclear proliferation, however, is not Pakistan, but China. The director of the Wisconsin Project of Arms Control Gary Milhollin has commented: "If you subtract China's help from the Pakistani nuclear programme, there is no Pakistani nuclear programme." There is evidence, including hints from Bhutto's prison memoirs, which suggests that China initially agreed to help Pakistan develop nuclear weapons when Bhutto visited Beijing in 1976.

It is now acknowledged that by 1983 China had supplied Pakistan with enough enriched uranium for two weapons and the designs for a 25 kilotonne bomb. Chinese support for the Pakistan programme is believed to have included a *quid pro quo* in the form of Pakistan providing China the designs of centrifuge enrichment plants. Interestingly, thanks to China, Pakistan acquired a nuclear arsenal at least five years before India decided to cross the nuclear threshold.

China's assistance to Pakistan continued even after Beijing acceded to the NPT. When Pakistan's enrichment programme faced problems in 1995, China supplied Pakistan 5,000 ring magnets. China has subsequently supplied Pakistan with unsafeguarded plutonium processing facilities at Khushab. There is also evidence that, over time, China has supplied Pakistan with a range of nuclear weapons designs.

**Warhead designs**

While the nuclear weapons designs supplied to Libya by AQ Khan were of a Chinese warhead tested

in the 1960s, the nuclear warheads tested by Pakistan in 1998 were of a different design. The nuclear manuals given by Khan were in Mandarin and were handed over to the Libyans reportedly in the shopping bag of Khan's Rawalpindi tailor!

According to Thomas Reed, former secretary of the US air force who was closely associated with the US nuclear weapons establishment, a Pakistani derivative of the Chinese CHIV-4 nuclear bomb was tested by Pakistan in China on May 26, 1990. This was eight years before India's own nuclear tests. Reed has disclosed that "in 1982, China's Premier Deng Xiao Ping began the transfer of nuclear technology to Pakistan".

Moreover, after warmly welcoming Prime Minister Rajiv Gandhi in Beijing in 1988, Deng commenced missile collaboration with Pakistan with the supply of short range Hafz 2 missiles. This was followed up by assistance to manufacture the Shaheen 1 (750 km range) and the Shaheen 2 (1500-2000 km range) at Fatehjang. China has thus not only provided Pakistan assistance for manufacturing nuclear weapons, but also for missiles, which can target population centres across India.

Not satisfied with providing nuclear weapons designs, know-how and modern uranium enrichment centrifuges, China soon found that Pakistan's arsenal would become more potent if it included lighter plutonium warheads, so that they combine with Chinese designed ballistic missiles. The entire Fatehjang-Chashma-Khushab nuclear complex in Pakistan, filled with Chinese nuclear power reactors, plutonium reactors and reprocessing facilities can well be described as a standing monument to China-Pakistan nuclear and missile proliferation.

**The Saudi Arabian connection**

There is an interesting parallel in the approach of Pakistan and China in nuclear and missile proliferation in the Islamic world. Saudi Arabia's defence minister Prince Sultan was given unprecedented access to Pakistan's nuclear weapons facilities in Kahuta in March 1999. In November, AQ Khan paid a visit to Saudi Arabia at the invitation of Prince Sultan, after which Saudi scientists were invited Khan to visit Pakistan's nuclear facilities.

Given these developments, there is interest and speculation about the precise direction that nuclear and missile collaboration among Pakistan, China and Saudi Arabia could take. Pakistan could, for example, justify deployment of nuclear weapons and missiles on Saudi soil. It is not without significance that the

chairman of Pakistan's joint chiefs of staff committee Gen Khalid Shamim Wynne, who handles its nuclear arsenal, was received at a high level in Saudi Arabia. Similarly, while Pakistan provided the designs of nuclear centrifuges to Iran over two decades ago, China is known to have been in the forefront of the transfer of ballistic missile know-how and technology to Tehran.

External Affairs Minister Sushma Swaraj raised the question of Beijing issuing stapled visas to Indian nationals visiting China during the recent visit of Chinese Foreign Minister Wang Yi, by pointedly calling on China to adopt a "One India" policy. While China issues these to Indians from Arunachal Pradesh and opposes international funding for projects in Jammu and Kashmir, it warmly welcomes high functionaries from Pakistan Occupied Kashmir, Gilgit and Baltistan.

Members of China's Peoples' Liberation Army have, in recent years, been involved in building roads and tunnels in Gilgit-Baltistan. The construction work is said to be for a transportation corridor linking China to the Arabian Sea at Gwadar port. But, tunnels across high mountain slopes are also ideal locations for nuclear weapons silos.

India has unfortunately not taken up with Beijing its concerns about China-Pakistan missile and nuclear collaboration. This challenge surely needs to be more seriously addressed, both diplomatically and strategically.

*Source: Hindu Business Line, 19 June 2014*

**OPINION – Carol Paton**

**Political Impetus Carries Nuclear Ambition**

The path to nuclear power in South Africa has been a long one. In 2007 Eskom went as far as identifying potential sites for nuclear power plants, before the idea was canned in 2008 for being too expensive. In 2010, faced with a constrained power system unable to meet demand and new carbon emissions targets, nuclear power returned to the agenda with a recommendation by the Department of Energy in its Integrated Resource Plan (IRP) that 13.4% of

**Since then, the South African government has been lobbied by nuclear firms from Russia, China, France, Korea and the US for contracts that, it is expected, could be more than R1-trillion. Especially relentless has been Russia — whose state-owned enterprise Rosatom has held several trade events in SA and has been host to South African nuclear scientists.**

South Africa's energy mix be generated from nuclear by 2030. Since then, the South African government has been lobbied by nuclear firms from Russia, China, France, Korea and the US for contracts that, it is expected, could be more than R1-trillion. Especially relentless has been Russia — whose state-owned enterprise Rosatom has held several trade events in SA and has been host to South African

nuclear scientists; and whose overseas news agency has already broadcast that it has secured South Africa's business.

The growing closeness with Russia was also made evident by President Jacob Zuma's growing closeness to Russian President Vladimir Putin. In 2013, when the lobbying was at its height, Mr Zuma and Mr Putin held three private meetings in the space of only a few months. South African delegations visited Russia several times, then undertook fleeting visits to other countries touting the nuclear business, with whom co-operation agreements were also signed. On 17 June night, South Africa took the most significant leap forward along the nuclear road when Mr Zuma stated unequivocally that the government would urgently procure nuclear power and that to do so the tendering process would be "fast-tracked" and would require "innovation". Also

significant was his statement that a range of new institutional structures would come into being to guide energy security and the roles of state-owned enterprises would have to be "adapted".

These changes, together with "fast-track procurement", imply a new set of arrangements for the building of energy infrastructure, especially the commissioning of nuclear power plants. It is not yet clear what these will mean and whether there will be transparency in the procurement process, which of necessity also entails political engagement through government-to-government agreements. Zuma also said black economic empowerment, local content and skills transfer would be top objectives of any energy build programme. But just as some in

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But just as some in

government – most notably Zuma – have embraced nuclear power since the 2010 IRP, others have become more averse. The stumbling block is once again the cost, and the fear that no matter how the Russians, French or Chinese dress up the deal to finance a large part of it from revenues, the upfront cost of nuclear power plants is enormous and seldom remains within budget.

The state's most important planning bodies have cautioned on nuclear power in the past year, arguing it is expensive and not warranted by projected demand. Nuclear power procurement, according to modeling done last year by both the National Planning Commission and the Department of Energy for its update to the IRP, should be delayed for several years, if not indefinitely, while cheaper options such as natural gas are explored. The function of the IRP is, on the basis of projected demand, to plan for sufficient energy generation over a 20-year period. In the update to the plan, completed in November last year and then published for comment, the conclusion is that nuclear energy will not be required any earlier than 2025 and very likely a good deal later. The plan's projection of future generation capacity is based on a robust assumption of a 5.4% annual growth rate, which analysts and economists agree is not a reality in the foreseeable future. It is in this context that Zuma has set about building the political support for nuclear procurement and preparing the nation for what is to come.

Although the ANC has seldom discussed energy issues in detail, despite six years of constrained supply, it emerged from its lekgotla two weeks ago calling for an "energy master plan". The energy issue has now become so urgent in the ANC that it has formally asked the government to come up with ways to "ensure a reliable, efficient and sustainable energy supply", and its economic policy head, Enoch Godongwana, has described it as the government's "primary task".

Energy constraints, say both Zuma and Godongwana, are partly responsible for economic underperformance, a statement with which nobody could disagree. However, Zuma has deftly translated

"energy constraints" into the need for the expedited procurement of nuclear power. Newly installed Energy Minister Tina Joemat-Pettersson is no doubt mulling this over. In the next [few weeks] she is to submit the final draft of the updated IRP to the Cabinet for approval....

Source: <http://www.bdlive.co.za>, 19 June 2014.

**OPINION – Christine M. Leah**

**A Scary Scenario: Fewer Nukes, Lots of Missiles**

...Although recent growing tensions between the United States, Russia and China have squashed some of the life out of the Global Zero movement, it still soldiers on – like the black knight of Monty Python and the Holy Grail, who, in spite of repeated blows that sever successive limbs, declares, "It's just a flesh wound." But developments in 2014 have further highlighted the fact that

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it's not just the proliferation of nuclear warheads that we should be worried about, but ballistic and cruise missiles as well. And this issue becomes even more important for the mission to lower nuclear numbers. There are new debates over whether Tehran's missile capabilities must be addressed in negotiations over its debated nuclear-weapons program. Senior Fellow of the Arms Control Association Greg Thielmann said in a recent op-ed that Iran's missile capabilities should be kept out of

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current negotiations on its nuclear-enrichment program, arguing that it would likely hurt negotiations and constitute a humiliating surrender for Tehran of the country's right to self-defense.

Iran's various activities, in turn, seem to have sparked interest by other regional powers in such capabilities. There are new concerns over Saudi Arabia's thirty or so CSS-2 missiles (or Dong Feng 3). These have a 2500-kilometer radius (which covers the whole Middle East) and are currently capable of delivering a 2000-kilogram conventional warhead. In the Asia-Pacific, whilst China does not seem to have made substantial changes to its nuclear posture, its (debated) conventional buildup is certainly having repercussions, with Japan and Australia recently

agreeing to cooperate on submarines and perhaps other types of military technology in the future.

All these developments illustrate the fact that it is not just nuclear weapons that are destabilizing; they are only one component of the overall military balance. This raises important questions about the real usefulness and effectiveness of the NPT in international security, including what the relationship between nuclear and conventional arms control is....

The world is unlikely to be rid of nuclear weapons anytime soon, but if the nuclear disarmers are to be taken seriously, they must think through the desirability of a "second conventional age." We tend to overlook the fact that the development of nuclear warheads coincided roughly with the development of short, medium, intermediate and eventually, intercontinental missiles. We need to think differently about the contribution of missile technology to the deterrence equation.... A world without nuclear weapons would graphically expose conventional imbalances, which in many instances have remained partially hidden in the current nuclear age. But it is upon these imbalances that any remaining system of deterrence would rely. There are problems here. Conventional weapons of the same weight (in hundreds of kilograms) fall demonstrably short in terms of crude high explosive capacity. Relying on these less-damaging conventional systems may raise the likelihood of war by making deterrence less feasible. With that in mind, Conventional Prompt Global Strike as an attempt at conventional deterrence doesn't look so good anymore. In deciding whether or not to use force, it might be more tempting for a state to risk the relatively high probability of relatively small effects (from conventionally armed missiles), rather than risk the moderately low probability of much greater damage (from nuclear ones).

Neither do conventional weapons carry the same taboo

against their use, or threatened use that is often claimed for nuclear weapons. Not a single nuclear warhead has been delivered by any delivery system to an enemy target since 1945. By contrast, in a thirty-year period that ended a decade ago, ballistic missiles were employed in at least six different conflicts. In addition, the detonation of 100 kilograms of high explosives is something that even small countries might not consider unbearable.... The idea that it might be easy to control a conventional missile war in a post-nuclear environment could also, ironically, be a problem. One can reasonably argue that a

conventional missile war would be thought to be much more controllable than a nuclear missile war. This, coupled with the absence of the threat of massive nuclear destruction in the escalation ladder, could make conventional war a not-so-unlikely prospect. And after nuclear weapons, would the proliferation of ballistic and cruise missiles suddenly become more "acceptable"? Could we see a nonnuclear arms race try to fill a nuclear-shaped gap? Would we fear that race less, because advanced conventional missile systems are less destructive, when we should fear it more, because of the lower threshold to the use of armed force that they might involve?...

Source: <http://nationalinterest.org>, 23 June 2014.

**OPINION – Rizwan Asghar**

**Reinforcing the Global Nuclear Order**

The current nuclear security framework and IAEA's verification capabilities do not cover the materials used for military purposes. The new regime must also fill this gap. ...Nuclear weapons are regarded as the most inhumane of all weapons ever created by mankind on this planet. With the diffusion of nuclear technology in the 21st century, these weapons are no longer difficult to make and even their limited use could cause destruction on a vastly greater scale. Events over the past decade have shown that even economically bankrupt countries like North Korea can

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acquire nuclear capability and a Hiroshima-type bomb is within the reach of al Qaeda if it succeeds in stealing or buying a very small amount of fissile material. Pessimists generally contend that nuclear weapons cannot be un-invented but their use can be regulated, as the use of chemical and biological weapons has already been outlawed. If the global community, led by the US, can garner the urgently needed political will to achieve universal compliance with non-proliferation norms, the goal of 'general' and 'complete' nuclear disarmament may not be beyond our reach.

In his April 2009 speech in Prague, US President Obama articulated his vision of a nuclear weapons-free world. After the Prague speech, the Obama administration proposed to open a new round of diplomatic negotiations with Russia for mutual reductions in deployed strategic nuclear warheads on both sides. After the Strategic Arms Reduction Treaty, signed in 2010, President Obama indicated his intention to resolve the issues related to US and Russian tactical nuclear weapons in Europe and further bold nuclear cuts. However, all his ambitious efforts were

soon bogged down by massive political and diplomatic resistance from certain conservative quarters in both countries. In 2014, the challenges facing the global nuclear non-proliferation regimes appear insurmountable. The collective failure of the international community to denuclearize North Korea and tackle post-Cold War era nuclear threats has brought the world to the nuclear tipping point.

Enough large quantities of HEU and separated plutonium exist in the world to make 100,000 nuclear weapons. According to some estimates, even nuclear waste in the world contains enough plutonium to make hundreds of thousands of more warheads. Against this backdrop, a majority of nuclear experts forecast an apocalyptic future on the global nuclear landscape. There is a desperate need for a comprehensive, universal and enforceable non-proliferation treaty that can offer the real possibility of effectively halting the spread of nuclear weapons. Some analysts might view the possibility of such a treaty as impractical or utopian

under the present circumstances but the world must think about what is necessary and not only in terms of what is practicable for the time being.

A major challenge faced by the current nuclear non-proliferation regime is that it is neither comprehensive nor universal. The regime does not effectively cover the uncontrolled fissile material that is used for military purposes by countries possessing nuclear weapons. In addition, nuclear weapons material in NPT nuclear weapon states – Pakistan, India and Israel – is not safeguarded by the IAEA. Any effective NPT must be universal because the likelihood of noncompliant states secretly developing nuclear weapons will continue to push their adversaries toward undermining the regime by withdrawing from it in order to acquire nuclear capability. In order to strengthen the credibility of

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any future NPT, all countries, including the five NPT member states, should be subjected to the same safeguards so that any feeling of discrimination is removed. Such an agreement must also establish a binding mechanism to immediately take action against any state violating the treaty, without the threat of a veto from the UNSC. The current

nuclear security framework and IAEA's verification capabilities do not cover the materials used for military purposes. The new regime must also fill this gap so that terrorists are denied any small possibility of getting their hands on nuclear materials.

Some analysts are of the view that such a new regime can be built on the foundations of existing institutions and treaties. The aforementioned three criteria – universality, impartiality and enforcement mechanism – can be included in the existing NPT framework in order to benefit from the robust norms already set against nuclear proliferation. The IAEA must be given more authority to verify compliance with these three criteria in the new nuclear security regime. The new regime must require all countries to make an obligation to give information about the exact quantities of fissile materials in their possession. Furthermore, all existing initiatives should be strengthened to reduce the possibility of a breach in the security of nuclear materials to a minimum.

The CPPNM must be made legally binding to secure nuclear material at all stages. All states must also take necessary measures to implement the 2004 UNSC resolution passed to prevent unauthorized entities from gaining access to sensitive materials. Many other international treaties like the CTBT currently awaiting the required consent of member states to enter into force must be ratified and implemented in true letter and spirit. All these pillars will provide a strong foundation to the new nuclear security regime to efficiently combat all kinds of dangers emerging from the spread of nuclear weapons.

Lastly, the issue of nuclear secrecy must also be taken care of in order to properly secure fissile material present in nuclear inventories in many countries. So, for the purpose of global security, all countries would have to agree to a more intrusive verification process. Nuclear terrorism does not pose a threat to a single country; rather it is a global threat that demands global actions. All these goals may not be achievable within a few months but President Obama can take the first step in this direction by persuading other countries to agree to a new nuclear security framework.

Source: <http://www.dailytimes.com.pk>, 24 June 2014.

**OPINION – The Hindu**

**Positive Step, But Hurdles Remain**

The Modi government has moved swiftly to ratify the Additional Protocol (AP) to the India-specific nuclear safeguards agreement with the IAEA. Essentially, the government has bagged a low-hanging fruit left behind by the Manmohan Singh administration which had done all the hard work of negotiating and signing a credible document, but had fallen short of delivering the final punch. The timely ratification just ahead of a meeting of the NSG – the closely knit 48-member club that controls the global flows of nuclear material – offers India several advantages. By clearing the decks for the enforcement of the AP, the government has bolstered its case for NSG membership. Apart from

**By clearing the decks for the enforcement of the AP, the government has bolstered its case for NSG membership. Apart from creating openings that could be possibly used for easier access to advanced nuclear technology, a presence in the NSG, which functions on the basis of consensus, would arm India with the power to protect its core interests.**

creating openings that could be possibly used for easier access to advanced nuclear technology, a presence in the NSG, which functions on the basis of consensus, would arm India with the power to protect its core interests. This would be a substantial gain, given that non-proliferation zealotry is significant within the ranks of the NSG, notwithstanding its decision to relax the technology ban on India after the 2008 Indo-US nuclear deal. Following the NSG's step, Russia, France, the UK, South Korea, Canada, Argentina, Kazakhstan, Mongolia and Namibia have signed bilateral civilian nuclear cooperation agreements with New Delhi.

The ratification of the AP reinforces India's credentials as a country committed to non-proliferation, for transfer of data on India's nuclear exports to the IAEA is a core element of the document. The ratification may also improve the atmospherics of the visit in September to the US by PM Modi. India has now fulfilled a commitment that it had made in the Indo-US joint statement of 2005. Despite the advantages that accrue from the ratification of the AP – which demands greater transparency in India's civilian nuclear establishments that are under international safeguards, but is hardly an intrusive document – impediments to nuclear commerce between New Delhi and the rest of the world remain. The Nuclear Liability Bill, which puts the onus of damages on the supplier, continues to hamper normalisation of India's nuclear trade with countries including the US and France. The bilateral nuclear cooperation agreement between India and Japan, which would allow New Delhi to import nuclear know-how from Tokyo, is also not yet concluded. The Modi government therefore has significant hurdles to cross beyond the ratification of the AP, before India is accepted as a nuclear weapon power, outside the framework of the NPT, freely engaging in nuclear commerce. It is only when that happens can atomic energy expand as a growing and salient component of India's energy security basket.

Source: <http://www.thehindu.com>, 25 June 2014.

**BALLISTIC MISSILE DEFENCE**

**USA**

**US Missile Defence System Test Successful**

The Boeing-managed ground-based system intended to shield the continental US has intercepted a simulated incoming missile over the Pacific Ocean for the first time, the Pentagon says. The Ground-based Midcourse Defense (GMD) system, with a \$US40 billion (\$A43.28 billion) price tag, aims to protect against long-range ballistic missiles from so-called rogue states such as North Korea and Iran. The successful test on 22 June followed the system's failure to hit a simulated missile in five of eight previous tests since President Bush's administration launched the program in 2004.

President Obama's administration has announced it plans to spend about \$US 1.3 billion on 14 more interceptors, but only if the closely watched test was successful. The

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interceptor missile was fired from Vandenberg Air Force Base in California and struck a dummy intermediate-range ballistic missile launched from the US Army's Reagan Test Site on Kwajalein Atoll in the Marshall Islands. "This is a very important step in our continuing efforts to improve and increase the reliability of our homeland BMD system," Missile Defence Agency chief Vice Admiral Syring said in a statement. The latest version of the warhead flown for the test contained hardware and software upgrades, according to manufacturer Raytheon.

It was the first successful intercept by Raytheon's Exo-atmospheric Kill Vehicle Capability Enhancement II, or EKV CE-II, which failed in both previous tests conducted in 2010. Overall, the test marked the 65th successful intercept out of 81 attempts since 2001 for the BMD System, according to the Pentagon. "This mission met several complex test objectives, including a long-duration flight time for the ground-based interceptor and high velocity closing speeds for intercept," a "proud" Boeing said. But some experts were critical even ahead of the \$US200 million test, saying the system was not ready for deployment, regardless of the outcome. ...

Source: <http://m.smh.com.au>, 23 June 2014.

**NUCLEAR STRATEGY**

**INDIA**

**Canister-Based Trial of Agni-V after Monsoon**

The first canister-based trial of the 5,000 km-plus, nuclear weapons-capable Inter-Continental Ballistic Missile, Agni-V, "in final induction configuration" is to be conducted after the monsoon season from Wheeler Island, off the Odisha coast. As a prelude to the actual firing, DRDO technologists successfully carried out the final 'Missile Ejection Test' from a canister in simulated conditions on 14 June, according to Scientific Adviser to the Defence Minister and DRDO Chief, Avinash Chander. The test validated all the parameters that would have to be met during the actual launch. The final test was completed, he said, and added that the launch from the canister would now be carried out from Wheeler Island after monsoon.

During the actual launch, the first stage of Agni-V would be ignited at a height of 25-30 meters after its ejection from the canister, DRDO sources said. The solid propellant-based gas generator at the bottom of the canister would provide a force equivalent to 300-370 tonnes to push Agni-V to a height of 30 meters when the first of the three stages gets ignited. Ensuring mid-air ignition of the first stage would eliminate the need to use jet deflectors when the flames erupt as the missile takes off. Also, canister launch would provide operational flexibility to the user to fire the missile from anywhere and makes the transportation of the weapon system much easier and safer. "It is better to carry the missile in a canister than in an open vehicle," say the sources.

Source: <http://www.thehindu.com>, 15 June 2014.

**NUCLEAR ENERGY**

**FRANCE**

**France to Cap Nuclear Reliance, Move to Renewables**

The French government is proposing legislation that would cap its use of nuclear power at current level of 63.2 gigawatts a year and instead shift its reliance to renewables, Energy Minister Royale said on June 18.

During his successful campaign for president in 2012, Francois Hollande promised to reduce reliance on nuclear energy to 50 percent by 2025 from today's 75 percent reliance, which is the largest proportion of any country. But Hollande's government has met resistance over how his plans could affect jobs and local economies if his government closes some nuclear plants. At the same time, his Socialist government was under pressure from environmental groups to increase the nation's reliance on renewables. At a news conference in Paris, Royale announced a compromise bill

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under which only one nuclear plant would be threatened, the Fessenheim reactor in eastern France. The future of other such plants, she said, would be decided under a five-year energy program to be announced at some time in the future.

Royale is seen as eager to avoid public focus on France's successful reliance on nuclear energy so far in order to insure that the French legislature will pass the measure quickly...

Instead, her ministry is stressing reducing the country's still expensive reliance on imported oil and gas, which now cost France \$94 billion a year, nearly all of its trade deficit. As a result, an important part of the proposal would be to increase investment in offshore wind farms, which so far are expected to generate 3,000 megawatts of electricity by 2020, as much as the output from four nuclear plants. It also would kick start the country's sluggish solar power industry, particularly in the sunny south of France. There also would be incentives for conservation, including a 30 percent tax reduction for insulating homes and commercial buildings, and helping spur growth in the use of electric cars by setting up vehicle recharging stations around the country by 2030. There also would be a subsidy for individuals trading in their diesel cars for electric vehicles.

Source: <http://oilprice.com>, 19 June 2014.

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## **SOUTH AFRICA**

### **SA Needs Nuclear Power, Says Zuma**

President Zuma on 17 June night tackled the two most pressing problems in the economy in his state of the nation speech: South Africa's energy constraints and instability in the mining sector. Announcing a detailed programme of action for the government for the next five years, which ranged from intervention in local government to improved service delivery, Mr Zuma paid special attention to outlining measures he said would provide

energy security and promote sustainable mining communities with decent living conditions for workers. A shakeup of the energy sector was imminent, he said, with nuclear energy and shale gas becoming important parts of the mix. Energy constraints as well domestic problems, such as the strike in the platinum mines, were responsible for the economy's underperformance, he said. Zuma

was unequivocal that the government would forge ahead with the procurement of nuclear energy. This was despite clear warnings over its cost and strong arguments from both the National Planning Commission and the Department of Energy over the past year that this should be delayed. Procurement processes for energy generation would be

"fast-tracked", said Zuma.

"This situation calls for a radical transformation of the energy sector, to develop a sustainable energy mix that comprises coal, solar, wind, hydro, gas and nuclear energy. The transformation will require structural changes in the manner in which government departments, affected state-owned companies and the industry as a whole, address the energy challenges," he said. Nuclear energy has the potential to generate well over 9,000MW of electricity, he said, while shale gas would be "a game changer" for the economy. Zuma announced several changes meant to speed up the delivery of energy

generation. Key among them will be the restructuring of the energy industry as envisaged by the Independent System Market Operator Bill, tabled and withdrawn without explanation in Parliament in 2013. The bill would separate Eskom's generation and transmission businesses.

... Zuma pledged acceleration of the building of Eskom's mega-power station Medupi and indicated the government's commitment to building a third power station, Coal 3, for which he said financing would "be speeded up" so that procurement can start. A fourth round of bids for the renewable energy independent power producers programme, to take advantage of wind, solar, biomass and other technologies which increase the opportunity for rural development, would continue, and the government would procure energy from the Grand Inga Hydro Power Project in the Democratic Republic of Congo.

... The 17 June 2014 night's announcement by Zuma followed the call by the African National Congress for a "energy master plan" and for overriding priority to be given to energy security. ...The plan calls for nuclear procurement to be delayed on grounds that projected energy demand will not require nuclear power for 11 years at the least, but probably much later. Attention will now shift to newly installed Energy Minister Pettersson, who is expected to subject a revised IRP to the Cabinet in the next two weeks....

Source: <http://www.bdlive.co.za>, 18 June 2014.

## **NUCLEAR COOPERATION**

### **IRAN – RUSSIA**

#### **Iran Says Ready to Sign Nuclear Reactor Deal with Russia**

Iran has said that it expects to sign a deal with Russia in late August on the building of two new 1,000-megawatt nuclear reactors in the Islamic Republic, potentially boosting its case that it is refining uranium for civilian energy, not atom bombs. ... Ali Akbar Salehi, the head of Iran's atomic energy organization, will go to Moscow to finalize the reactor contract and construction may start early next year, the IRNA news agency reported Tuesday. There was no immediate comment from Russia. ...

IRNA reported that senior Iranian and Russian nuclear energy officials, including the deputy chief executive of state-owned Rosatom, Nikolai Spassky, met in Tehran to discuss commercial and technical

details of the planned reactors. Behrouz Kamalvandi, a spokesman for Iran's atomic energy organization, said the reactors would be built next to the first unit of the Bushehr nuclear power plant. It is very likely that Salehi's trip to Moscow "will take place at the end of August," he said, adding that construction of the reactors could start by the end of the Iranian year which runs until March 2015. ...

Source: *The Moscow Times*, 25 June 2014.

### **JAPAN – USA**

#### **Third Meeting of the US-Japan Bilateral Commission on Civil Nuclear Cooperation**

The third meeting of the US-Japan Bilateral Commission on Civil Nuclear Cooperation was held on June 12, 2014 in Tokyo, with Japan's Deputy Minister for Foreign Affairs Sugiyama and US Deputy Secretary of Energy Poneman leading the discussions as Co-Chairs. The delegations included participants representing a wide range of governmental agencies. Established at the US-Japan summit held in Washington, D.C. in April 2012, the Bilateral Commission serves as a standing senior-level forum to foster a comprehensive strategic dialogue and joint activities related to the safe and secure use of civil nuclear energy and the response to the accident at the TEPCO Fukushima Dai-ichi Nuclear Power Station.

The first meeting of the Bilateral Commission (BLC) was held on July 24, 2012, in Tokyo, at which time five working groups were launched to coordinate bilateral cooperation. They cover the following subjects:

- Nuclear security;
- Civil nuclear energy research and development;
- Safety and regulatory issues;
- Emergency management; and
- Decommissioning and environmental management.

The second meeting of the BLC was held on Nov 4, 2013, in Washington, D.C, during which each of the Working Groups reported on the status of its activities. Both sides discussed the next steps for each working group and how to further enhance bilateral cooperation in each field. During the third meeting of the BLC on June 12, 2014, each of the

Working Groups reported on the status of its activities, and agreed to specific activities to perform before the next BLC meeting. With respect to nuclear security, the US and Japan reaffirmed their commitment to strengthen the nuclear security posture of both countries and to reduce the threat that terrorists could acquire nuclear material. The NSWG reported on key activities undertaken since the second BLC meeting, including technical meetings and exchanges, and capacity-building efforts. In support of the March 2014 announcement at The Hague Nuclear Security Summit, the US and Japan will continue to make utmost efforts to complete the timely removal of highly-enriched uranium and plutonium from the Fast Critical Assembly (FCA) to the US.

On civil nuclear research and development, the US and Japan discussed ongoing joint projects in the areas of advanced reactor, light-water reactor, and fuel cycle and waste management RD. The BLC reviewed the outcomes of the Civil Nuclear RD Working Group (CNWG) meetings held in Tokyo in February 2014, as well as the results from a probabilistic risk assessment (PRA) roundtable also held in Tokyo. The US offered to perform a technical review of a planned Japanese PRA roadmap. The US and Japan also indicated their intention to explore potential RD collaboration under the CNWG in the area of PRA methodologies and their applications to enhance nuclear safety. Both sides agreed that the next meeting of the CNWG and its sub-working groups will be held in November 2014 at Argonne National Laboratory.

On nuclear safety and regulation, the US and Japan reviewed the results of technical discussions on the current status of the Fukushima Daiichi Nuclear Plant, reviews regarding conformity with new regulatory requirements, emergency preparedness and response, approaches to PRA, the US NRC's and the Japan Nuclear Regulatory Authority's approaches to aircraft impact assessments, and the US experience with the IAEA's International Physical Protection Advisory Service missions. The US and Japan agreed to enhanced information sharing

between the Nuclear Regulatory Commission and the Nuclear Regulatory Authority on PRA and related topics and confirmed plans for the next NRC-NRA Steering Committee Meeting, which will be held in Winter 2014 in Tokyo.

Regarding civil nuclear liability, the US and Japan reaffirmed their support to the Convention on Supplementary Compensation for Nuclear Damage (CSC). Japan reaffirmed its intention to submit the CSC to the Diet within 2014 and to work with the US to work together to establish a global nuclear liability regime by encouraging other countries to join the CSC, thereby achieving a major objective of the Action Plan on Nuclear Safety adopted by the IAEA. On emergency response, the US and Japan continue to share actions and best practices in ensuring effective emergency response, data monitoring and information

systems, and managing complex disasters. The US and Japan agreed to rebuild momentum for the Emergency Response Working Group, specifically by conducting regular, working level communications between EMWG sessions, and implementing an agreed work plan. They exchanged invitations to observe exercises related to nuclear emergency management.

On decommissioning and environmental management, the United States and Japan reiterated their commitment to cooperation on cleanup efforts at Fukushima Dai-ichi. The Decommissioning and EMWG participants reported on the results from their two meetings in January and April 2014. The US reaffirmed its commitment to provide a technical expert to participate in Japan's review of its Request for Proposals regarding contaminated water treatment. In addition, Japan was presented with the option for US senior executives to consult with them and provide their experience in environmental clean-up activities and technologies on the organizational and management issues involved in large-scale and long-term onsite and offsite environmental clean-up activities at Fukushima.

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The US EPA will continue to facilitate technical exchanges with subject matter experts to address many of Fukushima’s critical cleanup challenges. Both sides also agreed to continue holding quarterly teleconferences to exchange information and to discuss specific technical areas and future cooperative activities in support of Fukushima’s cleanup and to continue direct partnerships with US DOE and EPA National Laboratories to address technical cleanup issues at Fukushima. Japan and the US committed to further strengthening information-sharing and cooperation within the five working groups and to report their outcomes to the next meeting of the US–Japan Bilateral Commission on Civil Nuclear Cooperation to be held at a date to be agreed in the US....

Source: <http://www.einnews.com>, 14 June 2014.

**RUSSIA – CHINA**

**Russia and China s Cooperation in Nuclear Energy Sees Bright Prospect**

Cooperation between Russia and China in the field of Nuclear Power Generation has got momentum in recent years. In the continuation of that Russia has offered China to share its experience in building nuclear plants in inland territories. “All Chinese nuclear plants presently are located in coastal areas and we know that China’s government has plans to begin the construction of nuclear plants in inland territories which badly need electricity,” said CEO of Russia’s state nuclear corporation Rosatom Kiriyenko... . “Russia has unique experience - we are one of the few countries which have vast experience of building and operating nuclear plants

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**Apart from that, Russia continues dialogue with partners in China on cooperation in building fast fission reactors and one such pilot reactor built with Russian technologies has already been commissioned in 2013. Russia and China have also agreed to develop cooperation in the field of construction of low and medium-capacity floating nuclear plants.**

in such territories. We are ready to share this experience with our Chinese partners”, Kiriyenko added.

Apart from that, Russia continues dialogue with partners in China on cooperation in building fast fission reactors and one such pilot reactor built with Russian technologies has already been commissioned in 2013. Russia and China have also agreed to develop cooperation

in the field of construction of low and medium-capacity floating nuclear plants. A memorandum to this effect was signed during the recent meeting between the Heads of the two states in Shanghai. Russia has been constructing four units at China’s Tianwan Nuclear Plant, two of which are already in operations and 3rd and 4th units are expected to be commissioned before 2017. Russia is in dialogue with China for construction of another 4 units at the same NPP.

Source: <http://www.energybangla.com>, 21 June 2014.

**SOUTH KOREA – USA**

**S. Korea, US in Home Stretch of Talks on Civilian Nuclear Cooperation**

A senior South Korean official strongly indicated on 19 June that Seoul and Washington have made progress in drawn-out talks on their civilian nuclear partnership... South Korea is seeking to upgrade its “strategic cooperation” with the US in consideration of its enhanced status in the nuclear power industry... Under the current agreement, signed in 1974; South Korea’s non-military nuclear program has been unilaterally dependent on the US.... South Korea is prohibited from enriching uranium and reprocessing spent fuel even for peaceful purposes. South Korean officials say that their country, an

emerging exporter of nuclear power plants, needs to expand its atomic energy program for the stable supply of nuclear fuel and the effective handling of spent fuel. ...The current version of the so-called 123 agreement was slated to expire in March this year. After failing to reach a new deal, the two sides instead agreed to extend it by two years to March 2016.

Many expect that it would take several months to finish domestic procedures, including parliamentary action. The official said, however, the two sides will have to talk more about some remaining thorny issues, apparently referring to Seoul's push for advanced consent for uranium enrichment and reprocessing of spent fuel. "It is difficult to reveal specific contents of the ongoing negotiations," the official said. "South Korea and the US have much in common in the development of nuclear energy. There is plenty of room for the two sides to deal with the matter in a cooperative way."....

Source: <http://english.yonhapnews.co.kr>, 20 June 2014.

**VIETNAM – USA**

**US Congress Urged to Pass Civil Nuclear Deal with Vietnam**

US nuclear firms have asked the Congress to soon ratify a civil nuclear deal with Vietnam, saying the passage will help boost exports and generate more jobs for Americans. Wolski, Curtiss-Wright's nuclear division vice president, said Vietnam's economy has grown steadily at 5-6% annually in recent years. The country plans to generate 10,000 megawatts of nuclear power by 2030, with the first reactors to come on line in the next decade. ...Curtiss-Wright isn't the only US firm that has seen opportunity in Vietnam's new commitment to nuclear energy. Westinghouse Electric Co. is opening an office in Hanoi this summer to take advantage of potential business opportunities.

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**President Obama in May 2014 signed a civil nuclear agreement (the 123 agreement) with Vietnam and sent it to Congress for review. American suppliers hope to benefit as soon as the agreement goes into effect, because the deal will help the US earn between US\$10-20 billion worth of exports and generate more than 50,000 jobs.**

hope to benefit as soon as the agreement goes into effect, because the deal will help the US earn between US\$10-20 billion worth of exports and generate more than 50,000 jobs. ...On June 9, Reps. Adam Kinzinger (R-III.) and Eliot Engel (D-N.Y.) introduced a resolution in the House of Representatives calling for approval of the agreement. The same day, Sen. Harry Reid (D-Nev.) introduced a joint resolution favouring the proposed agreement. The US Congress will have 90 days to review the nuclear deal with Vietnam.

Source:<http://english.vietnamnet.vn>, 20 June 2014.

**NUCLEAR PROLIFERATION**

**INDIA**

**US Dismisses Report on India Covertly Increasing Nukes**

The US on 20 June dismissed a report suggesting that India is covertly enriching its nuclear weapons capabilities, describing it as "speculative." "We're not in a position to speculate on its conclusions," State Department Spokesperson Jen Psaki told reporters at her daily news conference when asked about a report which alleged India is covertly enhancing its nuclear weapons capabilities.

We remain fully committed to the terms of the 123 agreement and to enhancing our strategic relationship. Nothing we provide to India under the civil-nuclear agreement may be used to enhance India's military capability or add to its military stockpile, but we don't have enough information or confirmation of the report to speak to that, Ms. Psaki said. Nothing provided to India can be used to enhance their military capability, she reiterated. "I'm not certain and...that would be highly speculative about this, given there's only one external report that's not a reflection of a US government report," Ms. Psaki said.

**We remain fully committed to the terms of the 123 agreement and to enhancing our strategic relationship. Nothing we provide to India under the civil-nuclear agreement may be used to enhance India's military capability or add to its military stockpile**

In a report by the IHS Jane's defence and security intelligence experts claimed that they have identified a possible new uranium hexafluoride

plant at the Indian Rare Metals Plant (IRMP) near Mysore. The report alleged that this site in India will support new centrifuges that will substantially expand India's uranium enrichment capacity, most likely to facilitate the construction of an increased number of naval reactors to expand the country's nuclear submarine fleet, but also, to potentially support the development of thermonuclear weapons. IHS Jane's experts assess that the new uranium enrichment facility could become operational by mid-to-late-2015. ...

*Source: The Hindu, 21 June 2014.*

## **IRAN**

### **Germany Hopes for N-Deal by July 20: Steinmeier**

The German FM has called on all sides involved in the talks over Iran's nuclear energy program to exhaust all their efforts to clinch a final deal before the July 20 deadline.... Meanwhile, Russian Deputy FM Ryabkov also said on the same day that all the negotiating sides are "determined to find a solution" to the West's decade-old dispute with Iran over the country's nuclear energy program.

There is a "chance" that Iran and the P5+1 group will manage to overcome their disagreements and reach a final deal by July 20, added the Russian diplomat. The comments come as Iran and the P5+1 have been holding a new round of talks in the Austrian capital of Vienna since 17 June to iron out their differences and finalize a permanent deal on Tehran's nuclear energy program. The two sides inked an interim accord in Geneva, Switzerland, last November, and set July 20, 2014 as the deadline to clinch a long-term nuclear agreement. On June 18, Iranian FM Zarif said Tehran and the six countries had started drafting a final deal despite the remaining "fundamental" differences, adding that if the other side shows political will, a comprehensive accord could be reached by the deadline.

*Source: <http://www.presstv.ir>, 20 June 2014.*

### **Iran Says it will Never Give up Nuclear Program**

Iranian First Vice President Jahangiri said that his country will never give up on its right to develop peaceful nuclear program. "Iran is ready to clarify ambiguities in regards to its nuclear program," he said, adding that the IAEA can supervise the country's program. He made the remarks at a meeting with

Cuban President Castro in Bolivia on 15 June.... The meeting was held on the sidelines of the Group-77 plus China Summit in the Bolivian city of Santa Cruz. During the meeting, the two sides also underlined the need for the further expansion of relations. Iran has in recent years expanded friendly ties with Latin America, specially in economic, trade and industrial fields. Iran's strong and rapidly growing ties with Latin America, specially with Venezuela, have raised eyebrows in the US and its western allies since Tehran and Latin nations have forged an alliance against the imperialist and colonialist powers and are striving hard to reinvigorate their relations with the other independent countries which pursue a line of policy independent from the US.

*Source: <http://en.trend.az>, 16 June 2014.*

## **NORTH KOREA**

### **Former US Official Expects 4th Nuclear Test by North Korea**

Former US deputy secretary of state Richard Armitage predicted Sunday that North Korea would proceed with its fourth nuclear test in what would be a "key moment" in its efforts to arm a ballistic missile with a nuclear warhead. North Korea, which has threatened to carry out a "new form of nuclear test" since early this year, has conducted three nuclear tests since 2006, but outside experts doubt Pyongyang has mastered the miniaturization technology needed to mount a nuclear warhead on a missile.

However, a leaked Pentagon report stated last year that there is "moderate confidence" that North Korea has succeeded in miniaturizing a nuclear warhead for a missile. South Korea's defense ministry cast doubts over the US assessment. ... Citing assessments from nuclear experts in the United States, South Korea and Japan, Armitage said, "Four tests would probably give enough information to North Korea so they can well develop the way of miniaturization." "And if they can miniaturize nuclear weapons, that means that they will put it on a warhead," he said. "This means, frankly all of us, something to fear."

If North Korea puts a nuclear-armed missile in launch position, Armitage said top leaders of South Korea and the US would have no choice but to "take actions." Time and patience are running short to

resume the long-stalled six-party talks aimed at ending North Korea's nuclear weapons program before another test. ...

Armitage said North Korea won't give up its nuclear weapons programs. "I think denuclearization is the last thing, if ever, North Korea will give," he said. "There is a very little chance of the DPRK really and voluntarily giving up their nuclear weapons." There have been general views that China could exert its influence on North Korea, but Armitage said Pyongyang won't listen to Beijing. They don't like China any much more than they don't like the United States. It's a fact," he said.

During the session, Miyamoto Yuji, who served as Japan's ambassador to China between 2006 and 2010, expressed his frustration in dealing with North Korea. "We, the international community, did every possible efforts to persuade North Korea to abandon nuclear weapons," Yuji said. "But we failed to get results." "Nuclear weapons even become a symbol of legitimacy to govern in North Korea," Yuji said. "My diplomatic knowledge is exhausted and I can't find a new way." If North Korea "comes out with a missile with a nuclear warhead, we have to take countermeasures," Yuji said. "And the war would start. It is a very, very serious matter in this part of the world. Therefore, I really hope that denuclearization should be a priority."

Source: <http://english.yonhapnews.co.kr>, 22 June 2014.

### **S. Korea's Top Nuclear Envoy Heads to Russia for Talks on N. Korea**

South Korea's top nuclear envoy left for Moscow on 16 June for consultations with his Russian counterpart on North Korea's nuclear weapons program.... During his three-day visit to Russia, Kook is scheduled to hold talks with Russian Deputy FM Morgulov, the Russian top envoy to the long-stalled six-party talks on ending Pyongyang's nuclear weapons program. "The meeting is expected to be

a venue for exchanging the assessment on North Korea's nuclear programs and the situation on the Korean Peninsula and Northeast Asia," Hwang told.... "Russia is in some aspects similar to China as it supports the swift resumption of the six-party talks, and it plays a key role in strengthening the international Nuclear Non-Proliferation Treaty.... That's why Russia's stance on the six-way talks is crucial, and this meeting is timely," he was quoted as saying. ...

Source: <http://www.globalpost.com>, 16 June 2014.

## **NUCLEAR NON-PROLIFERATION**

### **INDIA**

### **IAEA Gets Greater Access to India's Nuclear Programme**

Modi government signals continuity in implementing the India-US nuclear deal. Signaling the continuity of policy, the new government has ratified the Additional Protocol, a commitment given under India-US nuclear deal by the previous dispensation to grant greater ease to IAEA to monitor India's civilian atomic programme. The Additional Protocol was ratified and this has been conveyed to the Vienna-based IAEA, the global watchdog of nuclear activities... .

**The ratification is a signal by the Modi government to the world, particularly the US, that it is serious in continuing to implement the India-US nuclear deal. This assumes significance since Mr. Modi is scheduled to travel to Washington to meet President Obama in September. The sources pointed out that India wants to send a strong signal to the international community that it is a "serious and responsible" nuclear weapons state amid its keenness to become a member of the NSG.**

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... The Additional Protocol, signed between India and the IAEA on March 15, 2009, involves a high degree of scrutiny of nuclear facilities, including its reactors and fuel cycle sites by the inspectors of the atomic energy body. India has already listed 20 of its sites as agreed between the two. These includes six facilities in the Nuclear Fuel Cycle in Hyderabad,

unit 1 and 2 and two more facilities in Tarapur in Maharashtra, units 1-6 of the Rajasthan Atomic Power Station, units 1 and 2 of Kudankulam Nuclear Power Plant and the Kakrapar Atomic Power Station. The move will help in facilitating multiple entries for the IAEA inspectors for conducting necessary inspections. Even the data transmitting that happens can be done with remote transmitting. Information about the nuclear exports would also be given to the IAEA so that cross verification could be done in an easier way.

Source: <http://www.thehindu.com>, 22 June 2014.

## NUCLEAR DISARMAMENT

### IRAN

#### Iranian FM Reiterates Iran's Opposition to N. Weapons

We are ready to prove to the world that we have never been looking for nuclear weapons," Zarif said in Vienna in a ceremony held to praise the Austrian and Iranian physicians who treated Iran's chemically wounded victims of the Iraqi-imposed war (1980-1988). "Today I have come from negotiations with negotiators whose countries claim to be against WMDs while they themselves were supporters of such kinds of weapons in 1980s and this is one the bitterest jokes of the world," the Iranian FM said after holding two days of negotiations with the world powers in Vienna. Iran, a signatory to the NPT, has on many occasions called for the removal of all weapons of mass destruction from across the globe.

The UNGA approved a draft resolution proposed by Iran on nuclear disarmament in October 2009 amid strong opposition by the US, Britain, France, Israel and a number of western countries. The resolution ratified in the first committee of the UNGA calls on all nuclear countries to annihilate their nuclear weapons under the supervision of international bodies. More than 100 countries, including non-nuclear members of NAM, voted for the resolution. The resolution also urges Israel to join the NPT and allow the IAEA to inspect its nuclear installations.

Source: <http://english.farsnews.com>, 19 June 2014.

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## NUCLEAR SAFETY

### CHINA

#### France Says Cooperation with China on Nuclear Safety is Lacking

France's atomic regulator is troubled about the lack of communication with its Chinese opposite on projects to construct powerful, new nuclear reactors. The state-controlled French atomic energy firm Areva is the developer behind two European Pressurized Reactors under construction in the Chinese coastal city of Taishan. Once operational, the reactors are expected to generate roughly double the amount of power as typical reactors in service today, Bloomberg has reported...

In February, 2014 Philippe Jamet, a French nuclear safety commissioner, told parliament that "unfortunately, collaboration isn't at a level we would wish it to be" with Beijing. "One of the explanations for the difficulties in our relations is that the Chinese safety authorities lack means.

During a 2013 visit to the Taishan construction site, one French safety inspector reported seeing that big machinery such as steam generators and pumps were not being maintained "at an adequate level" of conservation. However, Areva Chief Operating Officer Philippe Knoche said the Chinese atomic regulator "is extremely demanding." There

are 28 nuclear plants presently being built in China — more than in any other single country.

Source: *Global Security Newswire*, 20 June 2014

### FINLAND

#### Finland to Help Set Up Nuclear Regulator

A team of nuclear experts from Finland will work with Saudi experts to establish a radiation and nuclear safety authority in the Kingdom.... "The partnership between Stuk and King Abdullah City for Atomic and Renewable Energy (K.A. CARE) will help in formulating legislation and exchanging experts as the first practical step toward a civilian nuclear energy program," said Johanna. The Finnish nuclear regulatory authority, which is considered one of the world's most outstanding regulatory bodies, has been entrusted with the task of

developing safety regulations and providing training to Saudi personnel. The whole project involving K.A. CARE and Stuk is devised to be a multi-year cooperation between the two. At the same time, Saudi Arabia has also brought in the engineering and consulting company Poyry to give advice on a strategy for the use of nuclear and renewable energy, according to an announcement made by the Finnish group Poyry....

**The Finnish nuclear regulatory authority, which is considered one of the world's most outstanding regulatory bodies, has been entrusted with the task of developing safety regulations and providing training to Saudi personnel.**

Source: <http://www.arabnews.com>, 15 June 2014.

## **JAPAN**

### **Anti-Nuclear Activists Ratchet Up Pressure to Block Restart of Kagoshima Reactors**

More than 1,000 protesters assembled before the prefectural government building here June 13 to oppose moves to restart a local nuclear power plant. If the Sendai nuclear plant in Satsumasendai, Kagoshima Prefecture, were to go back online, it would mark the nation's first restart under new safety standards brought in after the March 2011 nuclear disaster in Fukushima Prefecture. The rally, which organizers deemed a "critical phase" in their anti-nuclear efforts, coincided with the start of the prefectural assembly session....

Among the other participants were evacuees from the disaster at the Fukushima No. 1 nuclear power plant. The rally was organized by about 90 groups, including a local co-op. The protesters submitted to prefectural officials a petition signed by about 120,000 people from across Japan in protest to the restart of the plant, which is operated by Kyushu Electric Power Co. Safety inspections by the NRA of Sendai's two reactors have progressed the most out of all the nation's reactors that are currently undergoing safety checks for restarts. The NRA's new safety standards were based on the aim of preventing a recurrence of a severe accident such as the triple meltdown at the Fukushima No. 1 nuclear power plant. The nuclear watchdog plans to wrap up its assessment of the safety of the plant in July or later.

At the prefectural assembly session, Governor Yuichiro Ito said, "The central government needs to guarantee the safety of the plant when it is

restarted." Ito reiterated a plan to hold meetings in five localities that are located within a 30-kilometer radius of the plant after the NRA completes its safety inspections. He intends to have NRA officials explain the results of the safety examination to gain the understanding of local residents. Last year, the NRA expanded the area that should be fully prepared for a possible nuclear accident to 30 km from 8-10 km. Local governments in the 30-km radius are expected to put emergency response measures in place. The opposition bloc is poised to attack the prefectural government about flaws in evacuation plans by the municipalities in the area. The governor and the prefectural assembly are not expected to debate whether they should give consent to the restart during the current session, which winds up July 4....

Source: <http://ajw.asahi.com>, 14 June 2014.

## **UK**

### **AWE Admits Fire Alarms Were Not Working**

The Atomic Weapons Establishment in Aldermaston has admitted that two fire alarms in buildings housing radioactive material were not working earlier this year, but insists its fire detection systems are now fully functional. Nuclear safety Watchdog, the Reading based, Nuclear Information Service said that there were concerns over fire safety systems at AWE Aldermaston – which manufactures and maintains the country's nuclear deterrent, Trident – after AWE reported two situations when fire alarms had not functioned properly earlier this year. "In one case, a faulty fire detector was repaired but was found to still not be working several days later, raising anxieties that it was not possible to be confident that alarms were operating properly at all times," said Burt, a NIS spokesman, who continued that the Office for Nuclear Regulation was investigating the safety of AWE's fire detection systems.

"ONR is now considering whether to take enforcement action against AWE for breaching safety regulations and is currently conducting its own investigation into shortfalls in management of the

**If the Sendai nuclear plant in Satsumasendai, Kagoshima Prefecture, were to go back online, it would mark the nation's first restart under new safety standards brought in after the March 2011 nuclear disaster in Fukushima Prefecture.**

alarm system, before deciding what further action is necessary," said Mr Burt. AWE issued a statement which said: "AWE identified and reported to the ONR in February 2014 two separate instances of fire detectors not working at two of the facilities holding radioactive material. Following a site-wide review, the company has now provided assurance to the ONR that all its detection systems are now fully functional." Immediate remedial action by AWE had included maintenance work and complete systems testing, along with more stringent management controls relating to fire alarm systems.

Source: <http://www.newburytoday.co.uk>, 15 June 2014.

## USA

### Safety Research for Nuclear Fuel

The explosions that damaged a crippled Japanese nuclear plant during a disaster that forced mass evacuations in 2011 show what can happen when nuclear fuel overheats. In response to the Fukushima Dai-ichi accident, the US government dramatically increased funding to develop tougher protective skins for nuclear fuel, hoping to spur innovation in designs that hadn't changed much in years.

While the US Department of Energy was spending \$2 million before the accident on future fuel designs, the funding reached as much as \$30 million afterward. Now scientists at multiple institutes are in the middle of developing designs that could start finding their way into test reactors as soon as this summer, followed by larger tests later on. The goal is to create nuclear fuel that that is more resistant to damage and melting in extreme situations and less prone to a chemical reaction that makes its metal wrapping brittle and produces explosive hydrogen gas. If researchers succeed, their work could give plant workers more time to keep an accident from spiraling into a meltdown that releases harmful radiation. The work is no cure-all to prevent accidents, but it's a way of reducing risk.

...Scientists in the government- and industry-funded efforts are experimenting with multiple solutions before narrowing their focus on the most-promising

technologies. Nuclear fuel has remained similar for decades. Uranium dioxide is compressed into a pellet about the size of a fingertip. Those pellets are stacked into fuel rods up to 15 feet long and placed in a tube, called cladding, made from zirconium alloy. That metal cladding resists corrosion in a reactor, holds up against heat and serves as a barrier that keeps radioactive elements in place without cutting too much into the energy produced by a nuclear plant. Nuclear fuel is supposed to withstand accident conditions, but the disaster at the Fukushima Dai-ichi plant shows how it can fail when pushed to extremes.

After an earthquake, tsunami waves crashed over the plant's seawall and disabled the electrical gear needed to run reactor cooling systems. When the cooling systems and backups stopped working, the reactors overheated. As water levels dropped, the metal cladding around the fuel reacted with steam and oxidized, producing hydrogen gas. Scientists blame that escaping hydrogen gas for causing multiple explosions that damaged the facility. The same reaction also produces heat, further contributing to the extreme temperatures that allowed fuel to melt and radioactive byproducts to escape. Some oxidation occurs during a reactor's normal operation, but nowhere near the levels that occur in an extreme accident.

Scientists are considering a range of improvements. Some are proposing fundamental departures. The Electric Power Research Institute is experimenting with cladding made of molybdenum, which maintains its strength in higher temperatures than the current zirconium alloys. A stronger metal would do a better job keeping nuclear fuel from melting and slumping in a reactor during extreme accidents. Engineers at the University of Tennessee are trying to coat cladding with ceramics that can withstand higher temperatures than the existing cladding, while Westinghouse Electric Co. hopes to use silicon carbide as the base for its claddings in future fuel designs.

**The goal is to create nuclear fuel that that is more resistant to damage and melting in extreme situations and less prone to a chemical reaction that makes its metal wrapping brittle and produces explosive hydrogen gas. If researchers succeed, their work could give plant workers more time to keep an accident from spiraling into a meltdown that releases harmful radiation.**

Quicker improvements may come from changing existing fuel designs. A nuclear engineer at the University of Illinois, Brent Heuser, received US funding to develop coatings that could be applied to existing cladding to prevent the chemical reaction that produces hydrogen, heat and weakens the cladding. His team is also interested in "self-healing" fuel, which has added materials that migrate to the surface of a fuel rod during an accident and form a protective coating. Any change must make financial sense. Adding safety improvements costs more money. That's not attractive to cost-conscious utilities since the existing cladding already meets federal safety rules. To get around the economic obstacles, some researchers hope to offset the extra cost of the protection measures by combining them with fuel that produces more energy before it must be replaced. Others like Heuser say regulators would need to force utilities to use the safer products...

Source: <http://www.castanet.net/news>, 14 June 2014.

### **Two Meetings to Discuss Palisades Nuclear Plant's Performance Last Year**

People will get two opportunities to hear how the Palisades nuclear plant is doing. Palisades was recently listed as one of the worst-performing plants in the country. Regulators have raised the plant's official safety rating, but they say the safety culture among security staff still needs to improve. A survey found security officers fear retaliation if they raise concerns. "The plant security officers are willing to raise issues that could impact nuclear safety and nuclear security but they are reluctant to raise internal issues such as work hours, overtime, communications with management and worker fatigue," NRC spokeswoman Chandrathil said. The plant created a plan to address the safety culture, but the NRC released a letter to the plant 20 June that states the plant's actions "have been insufficient to assess and understand the cause of the chilled work environment" among security workers and "did not demonstrate a strong commitment to effectively improve the safety conscious work environment."

**Palisades' performance improved in 2013 according to regulators, but the plant near South Haven still had a few problems. The big news was when the plant accidentally leaked slightly radioactive water into Lake Michigan.**

"Specifically, significant gaps were found to exist in the security officers' knowledge of the actions being taken to address the chilled safety conscious work environment and management's commitment to improving the overall safety conscious work environment," the letter said. Overall, Palisades' performance improved in 2013 according to regulators, but the plant near South Haven still had a few problems. The big news was when the plant accidentally leaked slightly radioactive water into Lake Michigan. Regulators say there was no risk to the public. After several attempts, workers did eventually fix the leak. So far, 2014 has been relatively uneventful at Palisades. Workers fixed some longstanding issues that were causing a different leak from the vessel that contains the nuclear reactor. But during those repairs they also discovered a foreign object lodged in the vessel. Regulators don't believe the object compromises plant safety. Regulators will discuss these and other issues at a meeting on 26 June....

Source: <http://michiganradio.org>, 23 June 2014.

## **NUCLEAR WASTE MANAGEMENT**

### **CANADA**

#### **Doubling Nuclear Waste Site Won't Boost Risk, Says Safety Regulator**

Doubling the size of a proposed nuclear waste site near Kincardine is not likely to harm the environment, says staff of Canada's nuclear safety regulator. Hearings are already under way before a federal review panel on a proposal by Ontario Power Generation to excavate a disposal site for 200,000 cubic metres of low- and intermediate-level nuclear waste near Kincardine. In material filed with the review panel, staff of the Canadian Nuclear Safety Commission says they see little change to the impact of the project despite the doubling in size. In the jargon of the nuclear industry, the project is referred to as a "deep geologic repository" or DGR. "The expanded DGR, as currently conceptualized, is expected to remain acceptably safe in the long term," says a report from safety commission staff....

The waste, to be buried on the grounds of the Bruce nuclear station, would come from the operations of

all three of OPG's nuclear stations in Ontario. After making the original proposal, OPG said it might expand the site to include "decommissioning waste" from its nuclear stations when they reach the end of their lives. That's expected to produce another 135,000 cubic metres of waste. But OPG says for "conceptual" purposes it is planning for up to 200,000 cubic metres of decommissioning waste. The additional waste would be placed in caverns beside those originally proposed, carved from a limestone formation, 680 metres below the ground, near the Lake Huron shoreline. OPG would have to get formal permission from the nuclear safety commission if it proceeds with the expansion. The Pickering nuclear station is likely to be the first to be decommissioned. It will reach the end of its operating life in about 2020. Then it will sit in "safe storage" until it starts to be dismantled in about 2044.

Opponents of the project have questioned whether it should be built so close to Lake Huron. The federal panel reviewing the proposal ended public hearings last fall. But it then announced further hearings will be held this September after radiation leaked from a nuclear waste site in New Mexico. That project had been cited by OPG as an example of a successful waste operation.

Michigan's senate has asked the International Joint Commission (IJC) to review the proposal.... The OPG project is separate from another that's currently under way to find a home for high-level nuclear waste, which is used fuel. The high-level project is being conducted by the Nuclear Waste Management Organization. It's looking at sites near the Bruce nuclear station, as well as in Northern Ontario and Saskatchewan.

Source: <http://www.thestar.com>, 23 June 2014.

## **GERMANY**

### **Public Comments Heard on Proposed German Waste Shipments to Savannah River Site**

The environmental impact of a US Energy Department proposal to keep highly radioactive nuclear waste from falling into terrorists' hands won't be known for nearly a year or longer. One million graphite spheres containing highly enriched uranium from German research reactors could be

shipped to Savannah River Site. Scientific breakthroughs at Savannah River National Laboratory uncovered disposal methods for the waste embedded inside the spheres – each about the size of a tennis ball. Returning the German waste to the US would fulfill an agreement under the Atoms for Peace program, said Maxted, the used fuel program manager at SRS.... Receiving graphite spheres is unlike anything previously done at SRS, Maxted said. The research and disposal would be funded by Germany. About 75 people attended a public comment session 17 June night for an environmental assessment underway by the Energy Department. Comments came from people ranging from environmentalists who oppose waste storage in South Carolina to scientists who want safe disposal of the waste.

**The waste, to be buried on the grounds of the Bruce nuclear station, would come from the operations of all three of OPG's nuclear stations in Ontario. After making the original proposal, OPG said it might expand the site to include "decommissioning waste" from its nuclear stations when they reach the end of their lives.**

there, the used kilograms of highly enriched uranium would board a train for SRS, where it would be processed and disposed. Modifications to the H-Canyon facilities at SRS would be used to remove thousands of small graphite spheres containing uranium. Removing graphite from all the used fuel would take about three years... .

**The Energy Department identified three alternatives for disposing of the uranium: downblending and reuse as reactor fuel; disposal in a radioactive waste disposal facility; or vitrification in the Defense Waste Processing Facility at SRS.**

"Leaving the fuel in Germany does not exclude the US or any other nation from the consequences of an accident," Cwalina said. "There is simply no safer way to disposition this material." Environmentalists, however, fear that SRS is burdened with nuclear waste management. Many said the US sets a dangerous precedent by accepting German waste, which could lead to requests from other nations to send waste to the site. The Energy Department identified three alternatives for disposing of the uranium: downblending and reuse as reactor fuel; disposal in a radioactive waste disposal facility; or vitrification in the Defense Waste Processing Facility at SRS. The three disposition alternatives would produce glass logs, similar to

those made now at SRS, that require a permanent federal repository for removal from the South Carolina site, Maxted said. Vitrification would produce about 100 logs, and the other options would produce between 10 and 20 logs. Savannah River Site has accepted spent research reactor fuel since the 1960s from every continent, Maxted said.

Source: <http://chronicle.augusta.com>, 24 June 2014.

### UK

#### UK Nuclear Cleanup Expenses May Top \$370 Billion

The UK may pay more than \$370 billion for atomic cleanup efforts expected to continue beyond the year 2130, the *London Telegraph* reports. The figure marked the upper limit of a range of possible remediation costs set on Monday in a yearly assessment by the British Nuclear Decommissioning Authority.

The effort's "estimated overall lifetime cost" now stands at \$186.8 billion, an \$11.2 billion increase

over last year. The office attributed the change in part to rising cost estimates for cleanup activities at the Sellafield atomic energy plant in Cumbria. "The NDA is required by UK accounting standards to provide a single figure," the document states. However, "even a small adjustment for changing confidence levels can add up to a significant number over a 100-plus year program." "When added together, the consequence of using ranges of estimates to reflect uncertainty is that potential costs could, for the whole mission, be somewhere between [\$149.6] billion and [\$370.2] billion," the agency said in its findings. Significant questions over how to deal with nuclear waste persist in a number of other countries, including the US and Japan.

Source: <http://www.nti.org>, 25 June 2014.



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