



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

Vol 10, No. 04, 15 Dec. 2015

TESTIMONY – George Perkovich

Civil Nuclear Cooperation with Pakistan: Prospects and Consequences

I think it highly unlikely that the governments of the United States and Pakistan would be able to agree on conditions that would motivate both states to complete a nuclear cooperation agreement. Thus, this discussion is largely hypothetical in my view. Nonetheless, the national, regional, and global interests that would be involved in pursuing such a deal are important enough to make even a hypothetical discussion worthwhile.

Any consideration of nuclear cooperation with Pakistan must begin by acknowledging that the network led by the former head of the Khan Research Laboratories, A.Q. Khan, proliferated nuclear weapon-related equipment and know-how to at least North Korea, Iran, and Libya. This is why Pakistan was dubbed the “nuclear Walmart” by a former director general of the IAEA, who did not mean the remark kindly. While key suppliers in this proliferation network operated in several European, Middle Eastern, and Southeast Asian countries, the motive force was a central figure in the Pakistani nuclear establishment.

The proliferation damage done by the Khan network is an enormous fact. At some point, the

Now, the more pertinent questions concern what can and should be done to motivate Pakistan to continue to improve its controls over nuclear materials, equipment, and know-how so as to build international confidence that proliferation will not occur again, either to states or to terrorists.

	<u>CONTENTS</u>
☞	TESTIMONY
☞	OPINION
☞	NUCLEAR STRATEGY
☞	BALLISTIC MISSILE DEFENCE
☞	NUCLEAR ENERGY
☞	NUCLEAR NON-PROLIFERATION
☞	NUCLEAR PROLIFERATION
☞	URANIUM PRODUCTION
☞	NUCLEAR COOPERATION
☞	NUCLEAR SAFETY
☞	NUCLEAR WASTE MANAGEMENT

question arises whether and when to learn from this fact and try to create new facts that are more propitious. Pakistan has been punished in some ways, including intense international opprobrium and sanction. I do not know of proposals to add

new punishments at this time, more than a decade since the network was rolled up. The United States did impose significant sanctions on Pakistan for its nuclear weapons program from 1990 onward with no apparent good result. Indeed, the

Khan network operated throughout this time of severe sanctions. Now, the more pertinent questions concern what can and should be done to motivate Pakistan to continue to improve its controls over nuclear materials, equipment, and know-how so as to build international confidence

that proliferation will not occur again, either to states or to terrorists. One answer is to continue to isolate and thereby to some extent punish the country forever. Another answer is to offer Pakistan ways to end its isolation by building international confidence that it is managing its nuclear program to standards at least as sound as those of other nuclear-armed states.

This sort of quandary is not new or unique. The United States and the international community confronted similar questions in negotiating Libya's surrender of its illicit nuclear and chemical weapons capabilities in 2003, in return for which sanctions were lifted on the country. Beginning in 2005, the United States led an international effort to normalize nuclear relations with India and end sanctions on nuclear cooperation with it through agreement in 2008 with the NSG. In July of this year, the United States and its five negotiating partners reached a Joint Comprehensive Plan of Action with Iran, through

which Iran agreed to a host of measures to verifiably limit its nuclear activities in return for sanctions relief. In each case, nuclear deals were made without linkage to other issues. The point is, there are precedents of Republican and Democratic administrations normalizing relations with states whose nuclear activities had long been highly problematic.

In the case of Pakistan, I would argue that the following issues should be analyzed and resolved, first within the US government, and then, perhaps, with Pakistan.

If criteria could be agreed upon by which Pakistan would become eligible for nuclear cooperation and/or membership in the NSG, are there public goods – in terms of nonproliferation, prevention of nuclear terrorism, and stability in South Asia –

what would be gained? One way to explore answering this question is to ask in parallel, what might be the consequences of conveying to Pakistan that it never could make itself eligible

for such cooperation (short of eliminating its stockpile of nuclear weapons and fissile materials, which no one believes is feasible)?

I submit that the answer to the second question is highly problematic from the standpoint of US and international interests. To

say in effect that Pakistan will remain isolated from the nuclear mainstream forever is to remove incentives that it might otherwise have to take additional measures to control and secure its nuclear arsenal – measures that would enhance regional and international security. The perverse consequences of eternal nuclear isolation are magnified by the fact that the United States already led an international effort to exempt India from restrictions on nuclear cooperation with no commitments from India to restrict the growth and

qualitative enhancement of its nuclear arsenal. The rivalry between Pakistan and India is driven by historical, political, religious, psychological, and security factors. On balance, it is arguably fair to say that the Pakistani security establishment bears a disproportionate share of responsibility for the conflicts and crises of the Indo-Pak relationship and the inability of diplomacy to normalize it. But this is not

the whole story, and, in any case, the fact of the rivalry means that if Pakistan is destined to be forever isolated while India is embraced, Pakistan will be less inclined to take steps that would be in India's and the rest of the world's security interest.

If there are security interests to be gained by offering the feasible possibility of ending Pakistan's

If criteria could be agreed upon by which Pakistan would become eligible for nuclear cooperation and/or membership in the NSG, are there public goods – in terms of nonproliferation, prevention of nuclear terrorism, and stability in South Asia – what would be gained.

The Pakistani security establishment bears a disproportionate share of responsibility for the conflicts and crises of the Indo-Pak relationship and the inability of diplomacy to normalize it. But this is not the whole story, and, in any case, the fact of the rivalry means that if Pakistan is destined to be forever isolated while India is embraced, Pakistan will be less inclined to take steps that would be in India's and the rest of the world's security interest.

nuclear isolation – compared with maintaining it forever – then a few alternative ways forward are suggested.

The simplest, least ambitious step for the United States would be to convey that no states that possess nuclear weapons outside of the NPT would be offered membership in the Nuclear Suppliers Group without having met criteria that the NSG would establish. Such criteria would encompass – at minimum – security of nuclear materials, export controls, and constraints on the expansion and characteristics of their nuclear arsenals. If and when the states in question met such criteria, they would be eligible for membership in the NSG (and presumably nuclear cooperation). This approach also would preclude any one of these states from entering the NSG and using that body's consensus decision-making rule to thereafter block the others from joining once they met the established criteria. For example, India could not enter the NSG and then forever block Pakistan from doing so. It is precisely this concern that alarms Pakistanis today. President Obama has pledged to seek India's membership in the NSG as soon as possible, without such criteria or any limitations on India's nuclear weapons program. Adopting a criteria-based approach to NSG eligibility would require a change in the current U.S. approach to India's membership so that if Pakistan met such criteria it would be eligible too.

Another way forward would be the one that the Obama administration is reported to be exploring with Pakistan. That is, to negotiate bilaterally steps that Pakistan could take which would then enable the United States to make the case with Congress and the NSG that Pakistan deserves to be considered eligible for peaceful nuclear cooperation and possibly membership in the NSG. This approach – if indeed it is what the administration is pursuing – would be Pakistan-specific rather than a template applicable to India, Israel, or unforeseeably North Korea.

Again, according to rather vague press reports, the administration is seeking Pakistan's agreement to take steps that would limit several boundaries of Pakistan's future nuclear arsenal. The nuclear deal with India did not require India to limit its production of fissile materials for nuclear weapons, or the types and number of weapons it develops and deploys, or its missile program. I do not know the details of what the United States has discussed with Pakistan, but press accounts suggest that the administration is seeking an agreed limit on the size

of Pakistan's nuclear arsenal as well as eschewal of deployment of small, battlefield nuclear weapons. The administration also is reported to be seeking limits on ranges of missile delivery systems Pakistan would develop and deploy. Limitations such as these

would ameliorate concerns over Pakistan's role in a nuclear arms race in South Asia. Such limitations on Pakistan's future arsenal also would create more favorable conditions for deterrence stability on the subcontinent. Indeed, limitations on missile ranges could also reassure Israel, the United States, and other states that Pakistan would not pose nuclear threats to them.

If Pakistan could be motivated to agree to such limitations in exchange for becoming eligible for peaceful nuclear cooperation and membership in the NSG, it is difficult to argue that such an arrangement would not significantly augment international security. In this case, the issue should not be whether to pursue such an arrangement, but rather whether it could be negotiated.

Pakistan will object: it is being required to limit its military capabilities while India is not. One response is that India did not proliferate nuclear material and know-how to North Korea, Libya, and Iran as Pakistan did. Another answer is that India has not wittingly harbored groups that conduct terrorism against the United States, NATO forces, and others. Nor does Pakistan serve US interests in balancing China's power as advocates of the nuclear deal with India believe India will. Nor is

If Pakistan could be motivated to agree to such limitations in exchange for becoming eligible for peaceful nuclear cooperation and membership in the NSG, it is difficult to argue that such an arrangement would not significantly augment international security.

Pakistan a potentially large buyer of U.S. nuclear reactors, military systems, or anything else, as India is hoped to be. Additional reasons can be listed. However, from Pakistan's perspective these answers only aggravate the feeling of being denigrated and having their security concerns vis-à-vis India ignored.

One can fairly argue that India does not harbor aggressive intentions towards Pakistan, and that India's current military capabilities do not give it a decisive offensive military edge over Pakistan. Pakistani military leaders respond that American security officials usually say "intentions can change, capabilities are what matter." But, when it comes to India, Americans want Pakistan to rely on professions that India's intentions are not offensive. Pakistanis retort further: if India's offensive capabilities are not overwhelming today, they could become more so in the future, especially given the size and growth of the Indian economy compared to Pakistan. Therefore, the argument goes, Pakistan needs a full spectrum of nuclear capabilities to deter India's future array of weaponry, and cannot agree to sharp limits on these capabilities without corresponding limits on India. For these and other reasons, then, it is highly unlikely Pakistan would agree to the sort of conditions that the Obama administration is seeking.

Another impediment to the deal is that the benefits reportedly being offered to Pakistan are not as great as they seem. These benefits reportedly include potential US exertions to remove restrictions on peaceful nuclear cooperation with Pakistan, and possible support of Pakistan's membership in the NSG. While it is true that Pakistani leaders have incessantly urged

While it is true that Pakistani leaders have incessantly urged the US to do these things, the reality is that commercial nuclear suppliers from countries other than China – that is, American, Russian, French, Japanese, and South Korean companies – are highly unlikely to pursue contracts to build nuclear power plants in Pakistan.

A strong argument can be made that a deal with Pakistan along the lines being reported would significantly improve India's security. But the political psychology of the situation is more complicated. Many Indian officials and commentators feel that US cooperation with Pakistan would devalue the singular favorable treatment extended to India.

the US to do these things, the reality is that commercial nuclear suppliers from countries other than China – that is, American, Russian, French, Japanese, and South Korean companies – are highly unlikely to pursue contracts to build nuclear power plants in Pakistan. Pakistan lacks the money to pay for multi-billion dollar nuclear plants. The security environment in Pakistan further vitiates these countries' and their companies' interests in

the Pakistani nuclear sector. Regarding membership in the NSG, while Pakistan would like to be eligible for it, such membership is not worth the perceived costs of unilaterally limiting Pakistan's future nuclear arsenal without reciprocal limitations on India's arsenal.

Fundamentally, Pakistani decision-makers measure what they want and what they are prepared to trade for it by comparison with India. Others perceive that Pakistan's true national interest is different, but this does not matter, unsurprisingly.

It is also not surprising that Indians who follow these issues are alarmed by reports that the United States might seek ways to remove restrictions on nuclear cooperation with Pakistan and open the way for Pakistan's entrance into the NSG. A strong argument can be made that a deal with Pakistan along the lines being reported would significantly improve India's security. But the political psychology of the situation is more complicated. Many Indian officials and commentators feel that US cooperation with Pakistan would devalue the singular favorable treatment extended to India since 2008. As one put it to me recently, "we do not want to be the member of a club that would have Pakistan in it."

Ideally, in terms of regional and international security, arrangements could be reached whereby both India and Pakistan would limit and stabilize their nuclear competition. However, the dynamics of this competition are dauntingly complex. India must not only deter Pakistan, but also China. China's strategic capabilities continue to grow, largely to contend with the United States (and Russia), and also with India. China and India have undertaken no meaningful dialogue on limiting their competition in this domain. Thus, in any consideration of mutual limitations with Pakistan, India still would seek acceptance that its capabilities would need to grow to balance those of China. Pakistan seems unlikely to accommodate this. Moreover, the cooperation between China and Pakistan in the nuclear, missile, and conventional military domains is a factor in India's calculations. Similarly, the defense cooperation between the United States and India enters into the calculations of China and Pakistan. The reported bilateral discussions between the United States and Pakistan on a possible nuclear deal do not encompass this broader dynamic, and cannot reasonably be expected to.

Even if it were possible to interest India and Pakistan in exploring ways to stabilize their nuclear (and missile) competition, such exploration would quickly encounter other related challenges. Pakistan feels that it needs a full spectrum of nuclear weapon capabilities to balance India's conventional military capabilities which will steadily grow over time. Pakistan would seek Indian agreement to limit such capabilities. But India counters that threats of terrorism and/or proxy violence emanating from Pakistan require a build-up of India's conventional military capabilities. India needs to be able to demonstrate that it could defeat the Pakistani military in response to future terrorist attacks on India. Otherwise, the argument goes, the Pakistani security establishment will not be motivated to demobilize anti-India actors. In other words, the nuclear competition probably cannot be

ameliorated without simultaneous address of the sub-conventional and conventional confrontation between Pakistan and India. But neither the United States nor any other outside power alone can create the array of incentives that would motivate and facilitate leaders of Pakistan and India to act constructively to untie the many strands of competition that are now knotted.

In conclusion, the purpose behind the reported engagement by the Obama administration with Pakistan in exploring a potential "nuclear deal" is constructive. The problem is not the desirability of such an effort, but rather its feasibility.

Source: <http://carnegieendowment.org>, 08 December 2015.

OPINION – Peter Thiel

The New Atomic Age We Need

This past summer, the Group of 7 nations promised "urgent and concrete action" to limit climate change. What actions exactly?

Activists hope for answers from the coming United Nations climate conference in Paris, which begins on 30 November. They should look instead to Washington today.

The single most important action we can take is thawing a nuclear energy policy that keeps our technology frozen in time. If we are serious about replacing fossil fuels, we are going to need nuclear power, so the choice is stark: We can keep on merely talking about a carbon-free world, or we can go ahead and create one.

We already know that today's energy sources cannot sustain a future we want to live in. This is most obvious in poor countries, where billions dream of living like Americans. The easiest way to satisfy this demand for a better life has been to burn more coal. In the past decade alone, China added more coal-burning capacity than America has ever had. But even though average Indians and Chinese use less than 30 percent as much electricity as Americans, the air they breathe is

The purpose behind the reported engagement by the Obama administration with Pakistan in exploring a potential "nuclear deal" is constructive. The problem is not the desirability of such an effort, but rather its feasibility.

far worse. They deserve a third option besides dire poverty or dirty skies.

In America, the left worries more about our five billion metric tons of annual carbon dioxide emissions and what it might do to Earth's climate. On the right, even those who discount the environmental effects of fossil fuels can't deny their contribution to economic volatility. We saw

this in 2008 when a historic high oil price coincided with a historic financial crisis. The need for energy alternatives was already clear to investors a decade ago, which is why they poured funding into clean technology during the early 2000s. But while the money was there, the technology wasn't: The result was a series of bankruptcies and the scandal of Solyndra, the solar panel manufacturer in California that went bankrupt in 2011 after receiving a federal guarantee of hundreds of millions of dollars. Wind and solar together provide less than 2 percent of the world's energy, and they aren't growing anywhere near fast enough to replace fossil fuels.

What's especially strange about the failed push for renewables is that we already had a practical

plan back in the 1960s to become fully carbon-free without any need of wind or solar: nuclear power. But after years of cost overruns, technical challenges and the bizarre coincidence of an accident at Three Mile Island and the 1979 release of the Hollywood horror movie "The China Syndrome," about a hundred proposed reactors were canceled. If we had kept building, our power grid

could have been carbon-free years ago. Instead, we went in reverse. In 1984, Ohio's nearly finished William H. Zimmer nuclear plant was abruptly

What's especially strange about the failed push for renewables is that we already had a practical plan back in the 1960s to become fully carbon-free without any need of wind or solar: nuclear power. But after years of cost overruns, technical challenges and the bizarre coincidence of an accident at Three Mile Island and the 1979 release of the Hollywood horror movie "The China Syndrome," about a hundred proposed reactors were canceled.

A new generation of American nuclear scientists has produced designs for better reactors. Crucially, these new designs may finally overcome the most fundamental obstacle to the success of nuclear power: high cost. Designs using molten salt, alternative fuels and small modular reactors have all attracted interest not just from academics but also from entrepreneurs and venture capitalists like me ready to put money behind nuclear power.

converted into a coal-burning facility: a microcosm of the country's lurch back toward carbon.

The 2011 Fukushima disaster seemed at first to confirm old fears: Nearly 16,000 people were killed by the Tohoku earthquake and tsunami. But nobody in Japan died from radiation, and in 2013 United Nations researchers predicted that "no discernible increased

incidence of radiation-related health effects are expected." Critics often point to the Chernobyl accident in the Soviet Union as an even more terrifying warning against nuclear power, but that accident was a direct result of both a faulty design and the operators' incompetence. Fewer than 50 people were reported to have died at Chernobyl; by contrast, the American Lung Association estimates that smoke from coal-fired power plants kills about 13,000 people every year.

Only recently has climate anxiety challenged nuclear fear. Just as the impact of coal smoke dwarfs the effects of radiation from Fukushima, global warming is predicted to be far worse than mere pollution. The problem is so big that some prominent environmentalists have already

declared defeat. But not everyone has been paralyzed. While politicians prepare a grand bargain on emissions limits that future politicians are unlikely to obey, a new generation of American nuclear scientists has produced designs for better reactors. Crucially, these new designs may finally overcome the most fundamental obstacle to the success of nuclear power: high cost. Designs

using molten salt, alternative fuels and small modular reactors have all attracted interest not just from academics but also from entrepreneurs

and venture capitalists like me ready to put money behind nuclear power. However, none of these new designs can benefit the real world without a path to regulatory approval, and today's regulations are tailored for traditional reactors, making it almost impossible to commercialize new ones.

Fortunately, we have solved this problem before. In 1949 the federal government built a test facility at Idaho National Laboratory to study and evaluate new nuclear reactor designs. We owe our nuclear power industry to the foresight of those New Dealers, and we need their openness to innovation again today.

Earlier this year, the House of Representatives passed a bill calling for reform of our national laboratories; recently, the White House hosted a summit meeting to support nuclear energy. However, now that the speeches are over, we still lack a plan to fund and prototype the new reactors that we badly need. Both the right's fear of government and the left's fear of technology have jointly stunted our nuclear energy policy, but on this issue liberals hold the balance of power. Speaking about climate change in 2013, President Obama said that our grandchildren will ask whether we did "all that we could when we had the chance to deal with this problem." So far, the answer would have to be no – unless he seizes this moment. Supporting nuclear power with more than words is the litmus test for seriousness about climate change. Like Nixon's going to China, this is something only Mr. Obama can do. If this president clears the path for a new atomic age, American scientists are ready to build it.

Source: <http://www.nytimes.com/>, 27 November 2015.

OPINION – Peter Jenkins

Iran's Nuclear Aberration

It was inevitable that some of the headlines greeting the IAEA final assessment of military nuclear research in Iran would be variations on the theme of "Iran's nuclear weapon program confirmed." In reality the picture that emerges from the assessment, distributed to IAEA members on December 2, is more complex—and less

alarming.

The IAEA is confident that Iran's scientists have looked into what would need to be done to detonate a nuclear warhead and fit a warhead into the nose cone of a medium-range delivery vehicle. But they have found no evidence that this knowhow has ever been applied to the construction of a prototype, or that any nuclear material has ever been used for research into making the core of a uranium- (or plutonium-) based device.

Adding the IAEA's findings to a recent statement by a former president of Iran and to the contents of recent US national intelligence estimates can produce a description of Iran's "nuclear weapon program" that goes something like this.

In 1984, Iran's leaders woke up to the fact that Saddam Hussein of Iraq, with whom they were at war, had tasked his nuclear scientists with producing a uranium-based bomb, the sooner the better. This prompted the Iranians to go onto the black market to acquire a uranium enrichment capability and possibly—though this is just an inference—design information for a uranium-based device. Their motive was to keep pace with, or even steal a march on Saddam, to deter him from threatening or using nuclear weapons to strike Iranian targets.

In 1988, hostilities between Iran and Iraq ceased, and in 1991 the UN forced Saddam to declare and dismantle all aspects of his nuclear weapon program. At that point his scientists still had a long way to go. Why Iran's leaders decided to call a halt to their program only in 2003, and not in the early 1990s, is a puzzle. What is now clear, however, is that prior to the 2003 halt, Iran's scientists were still engaged in basic research. There are no signs of a "crash program" in the years following the unravelling of Saddam's nuclear weapon ambitions.

We can also say with confidence, thanks to the IAEA, that Iranian weapon-related activities never reached the point of entailing any breach of Iran's core non-proliferation commitment to refrain from manufacturing or otherwise acquiring nuclear weapons.

A Controversial Process: The distribution of this assessment marks the end of a controversial process. In early 2008, the IAEA elevated a two-year “concern” about the alleged study of a uranium-conversion process, warhead-detonation techniques, and missile nose-cone design work into an investigation into a “possible military dimension” (PMD). It is not clear from Agency reports why it decided on this change of tack.

Nor is it clear what led the IAEA to put to one side initial doubts about the authenticity of the documents that constitute the original “alleged studies.” The documents came from a laptop smuggled out of Iran in 2004. Supposedly the documents were initiated within the confines of Iran’s nuclear weapon program. Yet they contain “deficiencies of form and format,” to quote from an IAEA report—puzzling inaccuracies and anomalies that led Iran to allege that the documents are forgeries—and these have never been explained away.

Of course over the last decade the IAEA has acquired a lot of additional information, some from open sources, some through their own investigations, and some from member states. This additional material has likely raised their confidence in the authenticity of the laptop information, despite its deficiencies, by corroborating aspects of it.

That, though, takes one into the murky world of intelligence collection. The reliability of human intelligence (HUMINT) can be notoriously hard to assess—witness the 2002 CURVEBALL case that featured false allegations of mobile biological weapon laboratories in Iraq. Perhaps very little of the “information from member states” to which reference is made passim in the December 2 assessment took the form of HUMINT. But no such assurance has been offered.

Then there is the question of the legal basis for investigating the PMD allegations. The mandate that the UN Security Council gave to the IAEA was clear. But after a while the IAEA started to claim that additional authority came from Iran’s nuclear

safeguards agreement. That was controversial because the safeguards authority relates to the completeness and correctness of nuclear material declarations. It was hard to conceive how some of the PMD allegations, e.g. the design of a missile nose cone, could have involved nuclear material.

Looking to the Future: These controversies now lie in the past. After the December 2 assessment the IAEA will likely concentrate on the broader question of whether Iran is harbouring any undeclared nuclear activities or material – the same question that arises in every Non-Nuclear Weapon State subject to the IAEA’s Additional Protocol, as Iran will be shortly.

This question is a lot more important than whether Iran is in possession of knowhow relevant to the making of a nuclear device. That knowhow is much less rare in 2015 than it was in 1945. What has saved the world from rampant nuclear proliferation is not the absence of knowhow but the absence of the inclination to make use of it.

Since 1945 only eight states have acquired nuclear weapons. This is mainly, though not entirely, because most states have preferred the collective security of adherence to the NPT to the costs and risks of becoming nuclear-armed. Iran’s leaders may not have been fully aware of those costs in 1984 or may have seen Saddam’s nuclear weapon program as force majeure. But they are aware now. The last 12 years of gruelling diplomacy and economic sanctions have seen to that.

So they have good reason to make a success of the July 14 Comprehensive Plan of Action (JCPOA). By implementing the confidence-building measures detailed in the Plan and complying scrupulously with its verification and transparency commitments, Iran can persuade the NPT community to view its “nuclear weapons program” as an aberration that its leaders do not intend to repeat.

And if US leaders are wise, they will encourage Iranian implementation by fulfilling their side of the July 14 bargain. That means lifting secondary sanctions and giving European and Asian banks and enterprises confidence about re-engaging with Iran. It also means adopting a less Manichaeian view of

the Middle East and recognizing the potential cost of exaggerating Iranian responsibility for regional instability and conflict. When nuclear non-proliferation is at stake, the ethical emotions on which politicians thrive must give way to sober judgement.

Source: <https://lobelog.com/irans-nuclear-aberration/>, 07 December 2015.

OPINION – Donald Kirk

Putin's Finger on the Nuclear Trigger - US Sees A Scary Reversal in Russian Policy

What's more dangerous – Russian President Vladimir Putin's dedication to building up Russia's nuclear and missile strength or North Korean leader Kim Jong-Un's commitment to the North's nuclear program as the centerpiece of the policy of "songun," military first?

Tom Countrymen, assistant secretary of state at the State Department's Bureau of International Security and Nonproliferation, minced no words about the threat posed by Putin's tough rhetoric as Russia flexes its muscles from Eastern Europe to the Middle East – and possibly northeast Asia too.

At a conference on nuclear issues staged by the Center for Strategic & International Studies in Washington, Countrymen excoriated Putin for having raised the risk of a nuclear holocaust while asserting Russia's power in terms reminiscent of the worst moments of the Cold War.

"The most dangerous development in the field of nuclear weapons is the reversal of a positive trend," said Countryman, blaming Putin for escalating tensions even if he doubted the Russian leader's show of strength would lead to withdrawal from the nuclear non-proliferation treaty. "I don't think there is any country out there that would leave the treaty and develop nuclear weapons," he said, with one notable exception. "North Korea has done so," he said. "Nobody can beat North

Korea for doing stupid things."

If that turn of phrase seems flippant, though, U.S. defense planners cite North Korea along with China and Russia when they talk of rising threats against the US. Nobody seriously believes North Korea has developed a hydrogen bomb, as Kim Jong-un mentioned almost in passing in a visit to a "revolutionary site" memorializing his grandfather, Kim Il-Sung, founder of the North's ruling dynasty, and his father, Kim Jong-il, the "dear leader" who died four years ago. Nonetheless, there is no doubt North Korea is developing the technology for fixing a warhead on the tip of a long-range missile with a theoretical range as far as the U.S. west coast.

Source: <http://www.forbes.com/>, 11 December 2015.

OPINION – Michael Clarke, Stephan Frühling, Andrew O'Neil

6 Reasons Why Australia Won't Get Nuclear Weapons

Christine Leah and Crispin Rovere argued in their recent article that "In a high-intensity conflict between the United States and China, it is conceivable that China may target Australia with long-range nuclear missiles as a step up the escalation ladder," and that "[i]n this eventuality, extended nuclear deterrence would hardly be credible."

In a high-intensity conflict between the United States and China, it is conceivable that China may target Australia with long-range nuclear missiles as a step up the escalation ladder," and that "[i]n this eventuality, extended nuclear deterrence would hardly be credible.

From this tautology—because in case of an attack, extended deterrence would of course have failed—they

deduce that the "most effective means" for Canberra to dissuade Beijing from such an escalatory step, and to assist the United States in Asia, is to "develop or acquire its own reliable long-range nuclear deterrent." They continue that while "many would consider this a bad idea" (as such a step would potentially have proliferation knock-on effects with other US allies such as Japan and South Korea), "the nations in Southeast Asia will see Australia as a more capable strategic partner and deepen cooperation." Moreover, Leah and

Rovere assert that Australia would be “legally entitled” to nuclear weapons given its role in British nuclear tests before the signature of the NPT, and assert that if the US would “publicly recognize” this, Australia could then “leverage its position in present nuclear arms control negotiations, further persuading countries in the region to exercise nuclear restraint.”

These are bold claims, and ultimately neither supported by sufficient evidence nor persuasive as strategic propositions. Moreover, we find that they ignore the strategic reasons that have led to Australia’s bipartisan consensus on nuclear policy since the Fraser Government of the 1970s, which are the major findings of our recently published history of Australia’s engagement in the strategic, economic and normative domains of nuclear policy since 1945.

Leah and Rovere claim that because of the threat of nuclear attack, “many Australians believe entering into conflict with the world’s most populous nuclear power, for any reason and under any circumstance, is unthinkable” – but neither extensive public consultation, as part of

Australia’s Defence White Paper in 2014, nor available polling supports such an assertion. This undercuts their central argument why Australian acquisition of nuclear weapons might be in the interest of the US, while others have already challenged the proposition that Australia had a legal right to do so within the NPT.

Importantly, Australian governments *did not* endeavor to acquire an *indigenous* nuclear weapons capability at any point in the past; but they did seek to keep the option open right up until the shelving of the Jervis Bay project (a proposal to construct a plutonium-producing heavy water reactor) in 1971. Indeed, much of Australia’s nuclear policy between 1945 and 1972 could be characterized as a strategy of “nuclear hedging,” whereby it sought to keep the country out of international commitments that were perceived as having the potential to constrain Australia’s

nuclear weapons options down the track.

The 1950s and 1960s were most challenging decades for Australian security, including conflict with Indonesia, expansion of Communism in Southeast Asia and nuclear proliferation to China. Australian policy makers have often been anxious about the credibility of US extended nuclear deterrence (END) guarantees, particularly at times of strategic or geopolitical flux, such as in the aftermath of French defeat in Vietnam, Britain’s “retreat” east of Suez or the Nixon Doctrine. In the 1970s and 1980s, Australia was very conscious it was under direct nuclear threat from the Soviet Union.

If the world completely changed, Australia’s nuclear policy might do so as well. But overturning

the arguments against nuclear weapons acquisition by Australia requires more than postulating one scenario where Australia might come under nuclear attack (and one that is rather at odds with the logic of Chinese nuclear doctrine and force structure, at that)—after all, the possibility of a major threat

to Australia, including from nuclear weapons, is hardly a new condition.

Rather, there are very good strategic reasons that have led to the high degree of continuity in Australian nuclear policy, since the Fraser government laid down the parameters for the export of uranium in 1977: strict adherence to the NPT, a commitment to the application of full-scope safeguards over Australian nuclear transfers, and diplomatic efforts to strengthen the international nonproliferation regime at all levels. Despite some inevitable variations in emphasis, governments of all political shades have made this a bipartisan orthodoxy since 1977.

Support to US nuclear extended deterrence at the bilateral and global level has also undergirded Australia’s nuclear policy under successive Coalition and Labor governments. Rather than

Ndeed, much of Australia’s nuclear policy between 1945 and 1972 could be characterized as a strategy of “nuclear hedging,” whereby it sought to keep the country out of international commitments that were perceived as having the potential to constrain Australia’s nuclear weapons options down the track.

damaging or inhibiting Australia's credibility with respect to nuclear diplomacy, extended nuclear deterrence as part of the bilateral security alliance with the United States has assured Canberra's regional neighbors of its nuclear abstinence and provided it with the opportunity to develop an activist nonproliferation agenda. How claiming nuclear weapons status for Australia would help Australia further its arms control agenda, let alone "further persuading countries in the region to exercise nuclear restraint," therefore remains mysterious.

Rather than damaging or inhibiting Australia's credibility with respect to nuclear diplomacy, extended nuclear deterrence as part of the bilateral security alliance with the United States has assured Canberra's regional neighbors of its nuclear abstinence and provided it with the opportunity to develop an activist nonproliferation agenda.

It also ignores that Australia's commitment to the global nonproliferation regime has been crucially shaped by an enduring national security interest in limiting nuclear proliferation in its immediate region. This interest was a major factor in Australia's deliberations regarding membership of the NPT in the late 1960s and early 1970s, with policy makers focusing on the role of nuclear proliferation in Southeast Asia in presenting arguments both for and against Australian accession to the Treaty. This genuine concern with the strategic consequences of regional nuclear proliferation stood in contrast to other Western US allies, who perceived the NPT as a mechanism to manage the Cold War. Australia's decision to sign and ratify the Treaty as a non-nuclear weapons state, and its subsequent support for the development of strict nuclear safeguards and consolidation of the nonproliferation regime, were seen as important steps to proliferation-proofing Australia's region.

Unlike a number of other similarly positioned middle powers, Australia has never seriously questioned the legitimacy of the nuclear arsenals of the five NWS recognized under the NPT. This tendency reflects the view that nuclear weapons are a stabilizing factor in international politics—particularly through the mechanism of deterrence—as long as they are wielded by "responsible" great powers.

This remained a major shaper of Australian nuclear policy and became a major factor in driving

Australia's activist nonproliferation diplomacy. In other words, Leah and Rovere's claim that "the nations in Southeast Asia will see Australia as a more capable strategic partner and deepen cooperation" completely overturns the judgment of successive Australian governments about the regional effect of Australian nuclear weapon acquisition.

Unlike a number of other similarly positioned middle powers, Australia has never seriously questioned the legitimacy

of the nuclear arsenals of the five NWS recognized under the NPT. This tendency reflects the view that nuclear weapons are a stabilizing factor in international politics—particularly through the mechanism of deterrence—as long as they are wielded by "responsible" great powers. This vision has at times been challenged, most notably during the years of Paul Keating's prime ministership (1991-1996), by a "disarmer" vision that sees nuclear weapons as "order destroyers" rather than "order builders" and thus inimical to Australian strategic and security interests. Despite this challenge, successive Australian

governments of both major political persuasions have ultimately structured much of the country's nuclear policy around this view. While this is not an argument against Australian acquisition of nuclear weapons as such, it reinforces that Australia ultimately had confidence in the stability of nuclear (extended) deterrence,

and is very conscious of systemic risks of proliferation—neither of which could be adequately addressed by the naive assumption that Australia could acquire nuclear weapons without consequences for the NPT regime as a whole.

Ultimately our study suggests that since the late 1970s Australia has maintained a bipartisan consensus that Australia's security would be enhanced, and not limited, by a functioning global nonproliferation regime that helps keep nuclear weapons from its own region. US END, while providing an "insurance policy" in the event of a deleterious deterioration of the regional security environment, has also enabled Canberra to pursue an activist nonproliferation diplomacy. Nuclear weapons acquisition, contrary to Leah and Rovere's position, would unravel this to Australia's significant detriment.

Source: <http://nationalinterest.org/>, 01 December 2015.

OPINION – Richard Martin

How Old is too Old for a Nuclear Reactor?

As the ongoing climate summit in Paris has moved from rosy exhortations by world leaders to the gritty, behind-closed-doors business of crafting an international agreement on limiting emissions of greenhouse gases, one theme has emerged: it is now broadly acknowledged that any path forward must include nuclear power.

The IAEA says that worldwide nuclear capacity must more than double by 2050 in order to help limit global warming to 2°C, the target set by the UN's Intergovernmental Panel on Climate Change to avert catastrophic consequences. As of late 2015 a total of 66 reactors are under construction worldwide, the highest number in 25 years. (There are 437 civilian nuclear reactors operating worldwide, according to the World Nuclear Association.)

Unfortunately, in the US the nuclear industry is

headed in the other direction. While there are now five reactors under construction, a number of plants have shut down or been designated for closure, including at least three scheduled for shutdown in the next five years. The average age of the US nuclear fleet is 35 years, near the end of most operating licenses. According to the Nuclear Energy Institute, a dozen plants, with a combined capacity of 12,189 megawatts, are scheduled for shutdown between now and 2025.

If those plants go offline it would mean the emission of an additional 67.3 million tons of carbon dioxide a year (to replace the lost power with fossil-fuel generation). That number includes the James A. FitzPatrick nuclear plant, on the shore of Lake Ontario, which its operator Entergy said will shut down by early 2017.

Many of these plants, though, will likely keep operating, thanks to the Nuclear Regulatory Commission's practice of granting new licenses to plants that have outlived their original operating licenses. Most of the 100 nuclear plants now generating power in the US were originally licensed for 35 to 40 years of operation; now the NRC is issuing new permits, in 20-year increments, that will allow them to keep running for 60 or even 80 years. Eighty reactors (many plants comprise more than one reactor) have already had their licenses renewed, and many of the remaining ones are likely to come up for renewal in the next decade.

Operating aging nuclear plants far beyond their original design lifetimes raises the specter of system failures, leaks, and accidents. Environmental groups, for example, have opposed a license extension for the Davis-Besse station, a nuclear plant operated by utility FirstEnergy in

Ultimately our study suggests that since the late 1970s Australia has maintained a bipartisan consensus that Australia's security would be enhanced, and not limited, by a functioning global nonproliferation regime that helps keep nuclear weapons from its own region.

The IAEA says that worldwide nuclear capacity must more than double by 2050 in order to help limit global warming to 2°C, the target set by the UN's Intergovernmental Panel on Climate Change to avert catastrophic consequences. As of late 2015 a total of 66 reactors are under construction worldwide, the highest number in 25 years.

northern Ohio, because of extensive cracking in the exterior of the plant's containment building. FirstEnergy "should retire Davis-Besse as planned," Pat Marida of the Ohio Sierra Club's Nuclear-Free Committee told reporters in September, "on Earth Day, 2017, rather than continuing to play radioactive Russian roulette on the Lake Erie shore for 20 more years."

In 2014, the commissioners rejected a recommendation from their own technical staff that the existing rules for relicensing should be revised to reflect increased concerns around going from 60 years to 80. The ruling cleared the way for companies to apply for a second renewal of operating licenses under the existing regulatory scheme.

Nuclear reactors and the plants that house them are subject to a number of unique forms of wear and tear, including the embrittlement of the reactor vessel from neutron bombardment over many years. Pushing these plants into their seventh and eighth decades is uncharted territory. Acknowledging these issues, the NRC will issue the latest edition of its report exploring the technical issues associated with aging reactors, the Generic Aging Lessons Learned Report, at the end of the year.

"The NRC has approved every request so far," says Dave Lochbaum, director of the Nuclear Safety Project at the Union of Concerned Scientists. "To be fair to the NRC, while it has never said 'no,' it has said 'not yet' plenty of times." For example, the NRC initially rejected the license renewal application for the Beaver Valley plant, near Shippingport, Pennsylvania, when it was submitted by FirstEnergy. The renewal was subsequently approved.

While there are significant unknowns around extending the lives of nuclear plants built in the

1970s and 1980s, most people in the industry believe that the reactors can operate safely for 80 years. And it's economic issues, not technical ones, that are likely to shutter aging nuclear plants over the next 20 years. Cheap natural gas and flattening demand for electricity have combined to make older nuclear plants relatively uneconomical. Although the price of uranium fuel is relatively low, and nuclear plants are comparatively inexpensive to operate (according to the Institute for Energy Research, the levelized cost of electricity from existing nuclear plants is lower, on a per-megawatt-hour basis, than that from combined-cycle natural gas plants), flagging demand, high maintenance costs, and competition from cheap natural gas are all combining to make it less attractive to utilities to keep older nuclear plants running.

The problem with money-driven nuclear shutdowns is that they don't account for the cost of replacing that power with other forms of generation. US utilities cannot meet their obligations to lower emissions under the EPA's Clean Power Plan if they're forced to replace large amounts of zero-carbon generating capacity from closing nuclear plants.

Entergy, for example, is closing the FitzPatrick plant not because of technical issues but because the plant loses money: an analyst with UBS Securities calculated that the plant will lose about \$40 million in 2016. Entergy has already announced the closing of two other money-losing plants in New England.

The problem with money-driven nuclear shutdowns is that they don't account for the cost of replacing that power with other forms of generation. US utilities cannot meet their obligations to lower emissions under the EPA's Clean Power Plan—to say nothing of whatever agreement emerges from the Paris talks—if they're forced to replace large amounts of zero-carbon generating capacity from closing nuclear plants. "If these plants shut down," says Jacopo Buongiorno, director of the Center for Advanced Nuclear Energy Systems at MIT, "our emissions reduction targets are going to go down the toilet."

Source: <http://www.technologyreview.com/>, 08 December 2015.

NUCLEAR STRATEGY

PAKISTAN

Pakistan Test-fires Nuclear-capable Shaheen-III Ballistic Missile

Pakistan on 11 November successfully test-fired the medium-range Shaheen-III surface-to-surface ballistic missile which can carry nuclear warheads up to 2,750km bringing many Indian cities within its range. The test flight of the missile was aimed at validating various design and technical parameters of the weapon system, according to a statement from the military's ISPR. It added that the missile is capable of delivering nuclear and conventional warheads in a range of 2,750km.

The impact point of the missile test was in the Arabian Sea, validating all desired parameters, the statement said. The test was witnessed by senior officers from SPD, Strategic Forces, Scientists and Engineers of Strategic Organizations. Director General SPD, Lieutenant General Mazhar Jamil, said the country had achieved a "significant milestone" in complementing the deterrence capability. He said Pakistan desires peaceful co-existence in the region for which nuclear deterrence would further strengthen strategic stability in South Asia. ...

Source: The Times of India, 11 December 2015.

POLAND

Poland Considering Asking for Access to Nuclear Weapons under NATO Program

Poland's deputy Defence Minister has said the ministry is considering asking for access to nuclear weapons through a NATO program in which non-nuclear states borrow the arms from the US. Tomasz Szatkowski said the ministry was discussing whether to ask for access to NATO's "nuclear sharing" program to strengthen the country's ability to defend itself.

Polish media said Szatkowski's comments to the

private broadcaster Polsat marked the first time a Polish official has indicated the country wants to join the program. Among NATO's 28 members there are three nuclear powers – the US, France and Britain – but only the US has provided weapons to allies for nuclear sharing. Belgium, Germany, Italy, the Netherlands and Turkey have hosted nuclear weapons as part of the program.

Source: <http://http://www.theguardian.com/>, 06 December 2015.

USA

Russia Says US Deployed 200 Nuclear Bombs in Europe

The United States has deployed around 200 nuclear bombs across Europe, Russia says, warning that the increased military operations of NATO, led by the US, is deteriorating the military-political situation in the world. "About 200 US nuclear bombs are currently deployed in Belgium, Italy, the Netherlands, Germany and Turkey. This nuclear ordnance is also subject to a renewal program,"

About 200 US nuclear bombs are currently deployed in Belgium, Italy, the Netherlands, Germany and Turkey. This nuclear ordnance is also subject to a renewal program," Russian Defense Minister Sergei Shoigu said.

Russian Defense Minister Sergei Shoigu said, Sputnik news agency reported.

The Russian minister further blasted the US and NATO for their gradual expansion of military activity, saying the approach is mainly to blame for the deteriorating military-political situation in the world. ...

Shoigu said that Russia has also greatly improved the capabilities of its strategic nuclear forces in a countermeasure to US and NATO's rising nuclear deployment, adding that the Russian nuclear triad is now outfitted with 55 percent of modern hardware. Russia does not look favorably upon the deployment of nuclear weapons in NATO states near its borders. Russian President Vladimir Putin said in June that if NATO threatens Russia, Moscow will respond to the threat accordingly. "If someone threatens our territories, it means that we will have to aim our armed forces accordingly at the territories from where the threat is coming.

How else could it be? It is NATO that approaching our borders, it's not like we are moving anywhere," he said.

Source: <http://www.presstv.com>, 11 December 2015.

BALLISTIC MISSILE DEFENCE

ISRAEL

Arrow 3 Missile Downs Ballistic Target in First Successful Test

Israel and the United States successfully shot down a target with the Arrow 3 ballistic missile interceptor on the morning of 10 December, the first validation of the advanced system's capabilities, the Defense Ministry said. The ministry said that the interceptor successfully calculated and engaged the launched target, in what was called "a major milestone" for Israel's missile defense system capabilities. "The missile successfully tracked the target and killed it," said Yair Ramati, director of the Israel Missile Defense Organization.

The Arrow 3 is designed to shoot down intercontinental ballistic missiles outside the atmosphere, intercepting the weapons and their nuclear, biological or chemical warheads close to their launch sites. Yoav Turgeman, the general manager of the Israel Aerospace Industry's missile division, which developed the system, said the trial was "a perfect test." ...

The interceptor was launched from the Palmahim air base in central Israel at an incoming missile fired by an air force jet toward the waters off Israel's coast, the ministry said.... Similar tests have sometimes caught Israelis off guard and caused minor panics in the urban center of the country.

The Arrow 3, which Israel has been developing with the United States since 2008, is a major part of the multi-layered air defense array that Israel has designed to protect itself against a range of missile

threats – from short-range rockets fired from the Gaza Strip and Lebanon, to longer-range threats like a missile launch from Iran. It serves as the uppermost layer of a system that also includes the Iron Dome short-range interceptor, David's Sling medium-range battery and Arrow 2 long-range system. The Arrow 3 missile interceptors are designed to intercept more than five ballistic missiles within 30 seconds at altitudes of over 100 kilometers (62 miles). High-altitude interceptions are meant to safely destroy an incoming nuclear, biological or chemical warhead, before its target or trajectory is identified.

The Arrow 3 is being developed by the Israel Missile Defense Organization from the Defense Ministry's research and development directorate and the US Missile Defense Agency. Ramati said

the system was specifically developed with Israel's needs in mind. Israel and the United States may now be the only countries capable of shooting down ballistic missiles in space, he said. Though this test was a major success for the system's development, the Arrow

The Arrow 3 missile interceptors are designed to intercept more than five ballistic missiles within 30 seconds at altitudes of over 100 kilometers (62 miles). High-altitude interceptions are meant to safely destroy an incoming nuclear, biological or chemical warhead, before its target or trajectory is identified.

3 will still need to go through additional trials before it is deployed. "There are additional flight tests, which we will do as soon as we can," Ramati said. Ultimately, the decision on deployment depends on the production of the necessary hardware and an agreement with the Israeli Air Force, which will operate the system, Ramati said.

A similar attempt to shoot down an incoming target conducted a year ago failed, with the test being changed at the last minute from a real-world "engagement test," in which the system would attempt to shoot down an incoming missile, to a far less dramatic target-tracking exercise. "The target scene was not satisfactory to meet test objectives and therefore an interceptor was not launched. A decision was

made to conduct a target test only," the Defense Ministry said in a statement following the failed test last year. A test of the system's earlier version, the Arrow 2, also failed to lock on to its target during a September 2014 trial.

Source: [http:// www.timesofisrael.com/](http://www.timesofisrael.com/), 10 December 2015.

No new nuclear reactor has been built in the US on time and on budget, and the overruns haven't been trivial. That track record, along with cheap and plentiful natural gas and a lack of environmental policy that incentivizes low carbon generation, has held back the nuclear renaissance predicted a decade ago. Even operating nuclear plants with capital costs far behind them are having trouble competing.

NUCLEAR ENERGY

USA

Westinghouse CEO Wants Next-generation Nuclear Reactor

Westinghouse Electric Co.'s CEO Danny Roderick in January challenged his employees to come up with the next big thing in nuclear energy – the next generation reactor. It had been a very long time since such words were uttered at the Cranberry-based nuclear company. "His charter was to take a clean sheet approach and come up with the most economic (option)," said Cindy Pezze, chief technology officer. The central question was: "How can we get to a more economic future for nuclear?"

No new nuclear reactor has been built in the US on time and on budget, and the overruns haven't been trivial. That track record, along with cheap and plentiful natural gas and a lack of environmental policy that incentivizes low carbon generation, has held back the nuclear renaissance predicted a decade ago. Even operating nuclear plants with capital costs far behind them are having trouble competing. A handful are headed for premature retirement. For that reason, economics and scale are top

In most of the nuclear reactors now operating, the nuclear core is placed in a pool of water. That prevents radiation from escaping into the air, but as the nuclear reaction heats up the water, cooler water must be constantly pumped in. Lead offers a more static solution. It absorbs radiation and doesn't boil until it reaches 3,182 degrees Fahrenheit. Those properties mean a lead-cooled reactor would need fewer pumps, thinner walls and have fewer "uncomfortable byproducts," shaving off a portion of capital and operating expenses.

priorities.

... The company's first step was to whittle down the possibilities. There are six types of Generation IV reactors being researched today. Westinghouse chose the lead-cooled fast neutron reactor concept, which submerges the nuclear core in molten lead and operates at extremely high temperatures.

In most of the nuclear reactors now operating, the nuclear core is placed in a pool of water. That prevents radiation from escaping into the air, but as the nuclear reaction heats up the water, cooler water must be constantly pumped in. Lead offers a more static solution. It absorbs radiation and doesn't boil until it reaches 3,182 degrees Fahrenheit. Those properties mean a lead-cooled reactor would need fewer pumps, thinner walls and have fewer "uncomfortable byproducts," shaving off a portion of capital and operating expenses. The whole operation would be smaller, Ms. Pezze said.

Doe Seeks New Ideas for Reactors:

In November, Westinghouse submitted its proposal to the Department of Energy, which had solicited ideas about advanced nuclear reactors that could be built by 2035. The agency plans to award \$80 million to two teams over the next five years, but that depends on Congress' approval going forward. In the meantime, the department is getting ready to announce the winners of a much smaller opportunity.

Westinghouse hasn't said yet who else it has enlisted to be part of its team, only that there are more than a dozen entities and that they include

universities, national labs and vendors. A spokesman for the agency said the response has been strong with more than a dozen teams vying for funding. The winners – there will be two, and each will be awarded \$6 million – are expected to be announced before the end of the year. By nuclear standards, that's a drop in the bucket. "At one time, there was a fair amount of investment going on in Generation IV," said Larry Foulke, adjunct professor at the University of Pittsburgh's Swanson School of Engineering.

An international consortium, Gen IV, sprung up in 2000 to guide research and collaboration in advanced reactor activities. "A number of nations were working together on these reactors," he said. "But as with most research activities where you're studying reactors on paper and not making them," investment dwindles. "Generation IV reactors are suffering from a lack of funding worldwide," he said. Europe and Russia are pulling ahead. Russia is due to start construction on a demonstration lead-cooled reactor next year, and European groups are working on three reactor designs. The investment needed to start from scratch and get to that demonstration stage is staggering. It's not something Westinghouse can do alone, Pezze said.

The last time the company tried at its hand at getting DOE funding for a new reactors design was in 2012, when the agency snubbed its pitch for funding for a small modular reactor. The following year, the DOE again passed over Westinghouse for a small modular reactor award and last year, citing unfavorable market conditions, the company pulled back on its program. ...

Source: <http://www.wtae.com/news/>, 01 December 2015.

Critics of US Plutonium Say Program is Too Expensive

Critics of a multibillion-dollar program to convert excess US weapons-grade plutonium into fuel for commercial nuclear reactors under a 2000 treaty with Russia have seized on a newly disclosed report to renew calls for an end to the project.

The fiscal 2016 defense authorization law includes

\$345 million in funding for a plant under construction at the DOE's Savannah River site in South Carolina, which will take 34 metric tons of plutonium and mix it with uranium to form safer MOX fuel pellets for use in commercial nuclear reactors.

Congress must still appropriate the funding authorized in the law, but supporters say they do not expect any issues. Critics argue the MOX project should be halted after years of delays and cost increases, even though any changes could jeopardize one of the few agreements with Russia that is still running smoothly. Francie Israel with the National Nuclear Security Administration said the US DOE was continuing work on the project for now, but several analyses had shown that diluting the plutonium and disposing of

it at a site in New Mexico would cost less than half of the MOX approach. Russia has its own program to eliminate 34 metric tons of plutonium.

A previously undisclosed report completed by privately-held Aerospace Corp for DOE in August concluded that diluting and disposing of the plutonium – or downblending – was the least technically complex of several alternatives and had the lowest cost risk since no new facilities were required. "This report confirms that ... the

Generation IV reactors are suffering from a lack of funding worldwide. Europe and Russia are pulling ahead. Russia is due to start construction on a demonstration lead-cooled reactor next year, and European groups are working on three reactor designs. The investment needed to start from scratch and get to that demonstration stage is staggering.

The fiscal 2016 defense authorization law includes \$345 million in funding for a plant under construction at the DOE's Savannah River site in South Carolina, which will take 34 metric tons of plutonium and mix it with uranium to form safer MOX fuel pellets for use in commercial nuclear reactors.

downblending option is clearly less complex, less risky and cheaper,” said Edwin Lyman, senior scientist at the Union of Concerned Scientists, urging Congress to end its parochial support for the MOX program....

A November 16 review completed by High Bridge Associates, a project management firm, for CBI said the downblending option was risky because cramming too much nuclear material into the New Mexico facility could result in a fission reaction. It said that adding material to the site would require a new environmental impact statement, which could delay work on the site if it sparked calls for the facility’s design life to be extended to 1 million years from 10,000 years, just as has occurred for the Yucca Mountain site in Nevada.

The High Bridge report also raised concerns that a change in the US approach could prompt Russia to withdraw from the 2000 treaty, as it has done with others, reversing nuclear non-proliferation efforts at a time of growing tensions with Moscow.

Source: <http://www.newsweek.com/>, 08 December 2015.

NUCLEAR NON-PROLIFERATION

IRAN

Nuclear Agency Says Iran Worked on Weapons Design Until 2009

Iran was actively designing a nuclear weapon until 2009, more recently than the United States and other Western intelligence agencies have publicly acknowledged, according to a final report by the UN nuclear inspection agency. The report, based

on partial answers Iran provided after reaching its nuclear accord with the West in July, concluded that Tehran conducted “computer modeling of a nuclear explosive device” before 2004. It then resumed the efforts during President Bush’s second term and continued them into President Obama’s first year in office.

But while the IAEA detailed a long list of experiments Iran had conducted that were “relevant to a nuclear explosive device,” it found no evidence that the effort

succeeded in developing a complete blueprint for a bomb. In part, that may have been because Iran refused to answer several essential questions, and appeared to have destroyed potential evidence in others.

The report...is intended to complete a decade-long attempt to determine what kind of progress Iran made toward the technological art of designing a warhead that could fit atop a nuclear missile. The completion of

the report is one of the steps that Iran had to take – along with dismantling centrifuges and shipping nuclear fuel out of the country – before sanctions will be lifted under the nuclear deal.

... The agency’s bottom-line assessment was that Iran had made a “coordinated effort” to design and conduct tests on nuclear weapon components before 2003 – echoing a United States national intelligence estimate published in 2007 – and that it had conducted “some activities” thereafter. “These activities did not advance beyond feasibility and scientific studies” and the acquisition of technical capabilities, the agency concluded. The efforts ended after 2009, or just as Mr. Obama was taking office and accelerating

A November 16 review completed by High Bridge Associates, a project management firm, for CBI said the downblending option was risky because cramming too much nuclear material into the New Mexico facility could result in a fission reaction. It said that adding material to the site would require a new environmental impact statement, which could delay work on the site if it sparked calls for the facility’s design life to be extended to 1 million years from 10,000 years, just as has occurred for the Yucca Mountain site in Nevada.

Tehran conducted “computer modeling of a nuclear explosive device” before 2004. It then resumed the efforts during President Bush’s second term and continued them into President Obama’s first year in office.

the sanctions and cyber sabotage program against Iran's nuclear facilities that ultimately brought Iranian officials to the negotiating table. Tehran gave no substantive answers to one quarter of the dozen specific questions or documents it was asked about, leaving open the question of how much progress it had made.

The report, titled "Final Assessment of Past and Present Outstanding Issues Regarding Iran's Nuclear Program," will not satisfy either critics of the nuclear deal or those seeking exoneration for Iran. Instead, it draws a picture of a nation that was actively exploring the technologies, testing and components that would be needed to produce a weapon someday. However, it does not come to a conclusion about how successful that effort was.

... Nothing in the report suggests that Iran will prevent the IAEA from monitoring its production of nuclear fuel for the next decade and a half, the crucial element of the July agreement. But Iran's refusal to answer some of the questions also does not portend well for transparency about its activities. At Iran's Parchin complex, where the agency thought there had been nuclear experimental work in 2000, "extensive activities undertaken by Iran" to alter the site "seriously undermined" the agency's ability to come to conclusions about past activities, the report said.

Source: David E. Sanger, William J. Broad, <http://www.nytimes.com>, 02 December 2015.

NUCLEAR PROLIFERATION

NORTH KOREA

North Korea Appears to be Building New Tunnel at Nuclear Site

38 North, a website which is dedicated to North Korea controlled by the US-Korea Institute at Johns Hopkins University's School of Advanced International Studies, said on 2 December, that a nuclear test doesn't appear to be imminent but

the new tunneling adds to North Korea's ability to conduct more nuclear tests if it wants. The site based its latest conclusions off on commercial satellite imagery of Punggye-ri, where North Korea has conducted three underground nuclear test explosions since 2006. The appearance of a new tunnel makes it "more likely that they will conduct a test in the coming year," Jeffrey Lewis, a nonproliferation expert at the Middlebury Institute of International Studies at Monterey, told *The Washington Post*. Images taken between April and November show a new tunnel entrance, the fourth at the site, and signs of construction.

North Korea is believed to have a handful of nuclear bombs and to be pursuing nuclear-armed missiles that could hit the US mainland. International talks aimed at ridding North Korea of its nuclear weapons were last held in late 2008. Its most recent test came in 2013. North Korea has been urged to abandon its nuclear ambitions, if it hopes to

have any dialogue with South Korea. South Korea President Park Geun-hye said in November "there is no reason not to hold an inter-Korean summit if a breakthrough comes in solving the North Korean nuclear issue." "It will be possible only when the North comes forward for a proactive and sincere dialogue. What counts most is North Korea's sincerity and determination to act on its words," she wrote in response to questions submitted by local and international news agencies in November.

Source: <http://www.foxnews.com/world/>, 03 December 2015.

URANIUM PRODUCTION

GENERAL

Uranium Outlook 2016: Supply Deficit in the Cards

The old saying "once burned, twice shy" was definitely at play in the uranium market this year – investors took the difficulties seen in 2014 to

38 North, a website which is dedicated to North Korea controlled by the US-Korea Institute at Johns Hopkins University's School of Advanced International Studies, said on 2 December, that a nuclear test doesn't appear to be imminent but the new tunneling adds to North Korea's ability to conduct more nuclear tests if it wants.

heart and approached the space with cautious optimism. But while 2015 forecasts missed the mark, hopes are high for uranium prices in 2016

For 2015, experts and analysts forecasted average uranium spot prices of US\$40 per pound and long-term prices in the US\$58 range. However, with only a few short weeks left in the year, prices aren't up to snuff. Uranium spot prices have averaged US\$37 in 2015, whereas long-term prices have checked in at an average of \$46.50.

"With almost all other commodities off so sharply in 2015, perhaps we should feel fortunate that uranium prices rose 2 percent year-to-date, from US\$35.25 per pound to US\$36 per pound," Dundee Capital Markets senior analyst David Talbot told the Investing News Network. "There were signs of recovery earlier this year, but that stalled and the spot market continues to have excess supply." He added, "the term market is even more of a head scratcher ... only 80 million pounds were contracted compared to over twice that much consumed this year. We still need utilities to return to contracting to see some firming in prices, which should happen as 2017 approaches. But until then, we expect both spot and term prices to remain somewhat stagnant in the absence of any catalysts."

Uranium Outlook 2015

Missed the Mark: Talbot said quite a few

drivers contributed to ambitious 2015 price outlooks, including supply disruptions at Olympic Dam and Rossing and the Russia/Ukraine fallout, which "seem[ed] to dissipate after a tense Q1 2015." Ongoing Japanese reactor restarts also played a role, as did the Chinese resurgence, which "is gaining momentum and, notably, is starting to go external as China begins to sell

reactors, services and financing abroad."

However, ultimately those factors did little to move uranium prices. One key element that kept prices suppressed during 2015 was the lack of buying by US utilities. Despite an estimated 15 to 20 percent of uncovered requirements, many utilities refrained from buying uranium due to excess inventories. That said, in the shorter term, it will likely be US utilities that boost uranium prices as contracts are expected to open up after next year and new deals will need to be signed.

"Excess inventories have been supplying many utility needs for the past few years. These are somewhat price insensitive," explained Curtis Moore, Energy Fuels' Vice President of marketing and corporate development. "Therefore, business has been extremely competitive. However, while overall global inventories are significant, most of these quantities are never going to enter the market. It is our belief that 'excess' inventories are limited, and when levels of 'excess' inventories get low, uranium prices will rise."

Supply Crunch on the

Horizon: Moving forward, growing demand for uranium paired with depleting supply should help move uranium prices up in 2016. Cantor Fitzgerald estimates global uranium demand for 2017

and 2018 at 198 million pounds and 201 million pounds U3O8, respectively; as of 2017, about 25 million pounds U3O8 will be uncovered, with that number falling to 40 million pounds by 2018. These numbers translate into uncovered amounts of 13 and 20 percent, respectively, with the uncovered portion growing at a rapid rate in the following years. What's more, available

For 2015, experts and analysts forecasted average uranium spot prices of US\$40 per pound and long-term prices in the US\$58 range. However, with only a few short weeks left in the year, prices aren't up to snuff. Uranium spot prices have averaged US\$37 in 2015, whereas long-term prices have checked in at an average of \$46.50.

One key element that kept prices suppressed during 2015 was the lack of buying by US utilities. Despite an estimated 15 to 20 percent of uncovered requirements, many utilities refrained from buying uranium due to excess inventories. That said, in the shorter term, it will likely be US utilities that boost uranium prices as contracts are expected to open up after next year and new deals will need to be signed.

supply from stockpiles and existing uranium operations likely won't be able to match the new demand coming into the market.

"Because of these sustained low prices, very little new investment is going into uranium projects around the world. Yet we all know new mines will be needed. But by the time prices rise to the levels needed to incentivize new project development – the \$60s or \$70s – production may not be there. You don't just 'turn on' large-scale mine production. You need many years – or decades – of permitting, financing and development before a pound of uranium is 'put in the can.' The long-term supply deficit is likely growing and becoming more intense," Moore said.

Kivalliq Energy's CEO Jim Paterson believes the upcoming supply/demand imbalance will bode well for those with high-quality projects underway. "We are in a stealth bull, with consumption of U3O8 growing steadily based on existing reactors and reactors under construction, while supply from uranium mining is very fragile due to the low pricing environment. It is creating a perfect storm for a big jump in value in the companies that own high-quality uranium projects."

Aldrin Resource Corporation has prime location in Canada's Athabasca Basin, adjacent to and strike with the high-grade discovery at the Patterson Lake South uranium property. Connect with Aldrin Resources to receive updates as they further explore the property and its great potential to host similar uranium mineralization structures to those found at Patterson Lake South.

Talbot said Dundee believes investors should be looking for three market, three demand and three supply factors in 2016. The market factors include: "increasing uncovered uranium requirements towards 2017, suggesting that utilities must resume contracting soon; dealing with what UxC calls an inventory-driven market (we note that not

all stockpiled uranium is readily available); and perhaps a shift to mid-term pricing as opposed to long term."

On the demand side, Talbot said to watch for aggressive Chinese and Russian nuclear reactor sales and subsequent fuel supply deals, as well as Indian nuclear liability laws and the economic survival of parts of the US nuclear fleet in regulated markets. The three supply factors he mentioned are: "incentive to build uranium mines or starve out new production; [the] realization that some companies are suitably contracted and current production may be profitable; and [the] ongoing preference for high-grade Athabasca Basin exploration projects." He also said his firm believes that an overlying climate change theme will come into focus in 2016, spurred by the UN Climate Change Conference in Paris. ...

Because of these sustained low prices, very little new investment is going into uranium projects around the world. Yet we all know new mines will be needed. But by the time prices rise to the levels needed to incentivize new project development – the \$60s or \$70s – production may not be there.

Uranium Outlook for 2016 and Onward: In September, Dundee Capital Markets expected uranium spot prices to reach US\$55 in 2016, and while the firm has yet to update its uranium forecast, it expects a slow start to the year. "We believe that uranium market pressures may continue through at least the first half of 2016. While we haven't adopted an updated uranium price forecast for 2016, we do believe that there is strong potential for higher spot and term prices as we move towards a significant increase in uncovered reactor requirements starting in 2017," Talbot said. "Our concerns about the uranium market remain largely centered on spot market supply, market manipulation at month end driving down prices (which never seem to rebound as quickly) and term market volumes."

Meanwhile, Moore said Energy Fuels expects a better market in 2016. "We saw slow, steady progress in 2015 – a bit of two steps forward and one step back. And we think 2016 will build on the positive fundamentals we saw in 2015. Excess inventories will still play a role in 2016." "A

recovery to at least \$50 at some point should happen, and it would not be a surprise to see \$50 in 2016. In addition, while we've certainly been surprised before, it's hard to see much more downside in this market," Moore added.

Source: [http:// investingnews.com/](http://investingnews.com/), 01 December 2015.

USA

New Deposits of Uranium Found in South Texas but Low Prices Remain a Challenge

The rolling hills just south of San Antonio may have more than triple the amount of uranium than previously believed but prices for the radioactive ore may need to move much higher before any new mining takes place.

The US Geological Survey released a report stating that geologists had previously identified 60 million pounds of uranium oxide under the rolling South Texas plains but now believe there may be an additional 200 million pounds of reserves. Maps from the study show that the previously undiscovered uranium reserves are in sandstone formations stretching from Karnes and Goliad counties to Zapata and Starr counties along the US-Mexico border.

Uranium is the key component for fuel at nuclear power plants. According to the study, the 100 operating nuclear reactors in the United States consumed nearly 53 million pounds of uranium oxide in 2014, of which more than 90 percent was imported. If properly mined, USGS officials reported that the 60 million pounds of previously identified uranium reserves in South Texas could provide up to one year's worth of fuel for

Geologists had previously identified 60 million pounds of uranium oxide under the rolling South Texas plains but now believe there may be an additional 200 million pounds of reserves. Maps from the study show that the previously undiscovered uranium reserves are in sandstone formations stretching from Karnes and Goliad counties to Zapata and Starr counties along the US-Mexico border.

American nuclear power plants.

USGS officials said that the 200 million pounds of previously undiscovered reserves, if proven and produced, could add another four years of nuclear fuel for the United States, bringing the total potential to about five years of domestic supply.

But market data shows that it may be some time before any significant increase of

uranium mining takes place in Texas. Data from Canadian mining giant Cameco shows that uranium prices reached an all-time high of \$136 per pound in June 2007 and dramatically plummeted following the March 2011 nuclear power plant accident in Fukushima, Japan. Uranium is currently trading at \$36 per pound. Lower demand from Japan and subsequently lower commodity prices have had a strong and negative effect on mining. Figures from the US Energy Information Administration show that uranium mining activity is at a 10-year low in the United States.

Source: [http://http://www.bizjournals.com/](http://www.bizjournals.com/), 07 December 2015.

NUCLEAR COOPERATION

AUSTRALIA-INDIA

Australian Government Gives Nod for Supply of Uranium to India

Data from Canadian mining giant Cameco shows that uranium prices reached an all - time high of \$136 per pound in June 2007 and dramatically plummeted following the March 2011 nuclear power plant accident in Fukushima, Japan. Uranium is currently trading at \$36 per pound. Lower demand from Japan and subsequently lower commodity prices have had a strong and negative effect on mining.

After eight years of intense negotiations, bureaucratic hurdles and a shifting nuclear policy, the Australian government has finally given the green signal to the export of uranium to India "which can begin immediately". The Australia-India Nuclear Cooperation Agreement permits Australian

companies to commence commercial uranium exports to India, an important milestone in Australia's relationship with India, Australian Foreign Minister Julie Bishop said in a media release.

While previous Liberal prime minister Tony Abbott was quite gung-ho about the supply of uranium to India, current incumbent Malcolm Turnbull would get the credit for sealing the deal to export uranium to the power-hungry south Asian country. "The supply of Australian uranium will help India meet its rapidly growing electricity demand and improve the welfare of its people," said Bishop in the media release. "The administrative arrangements have been signed and uranium exports can begin immediately." Many observers of the bilateral ties would agree with foreign minister's assertion that the export of uranium to India is a milestone in the bilateral relations.

It was Liberal Prime Minister John Howard who first agreed to sell uranium to India in 2007 in spite of the refusal by New Delhi to sign the NPT which has been a pre-requisite to receive Australian uranium. It is believed that Australian PM was persuaded by the US to sell uranium to India soon after finalisation of the US-India Civil Nuclear Agreement in July that year.

Source: <http://timesofindia.indiatimes.com/>, 29 November 2015.

CANADA-INDIA

Canada Sends First Consignment of Uranium to India

Canada has sent the first uranium consignment of 250 tonnes to India for its nuclear power reactors, over two years after the civil nuclear deal signed between the two countries came into force.... In April, Cameco signed a uranium supply contract with India after the nuclear cooperation agreement between Canada and India came into

force in September 2013.

According to the Canadian government, the contract to supply 7.1 million pounds of uranium concentrate (about 2,730 tonnes uranium) to India's DAE was worth around Canadian Dollars 350 million (\$262 million). The government of the Canadian province of Saskatchewan stated on 5 December that the shipment consists of uranium mined and milled at Cameo's McArthur River and Key Lake operations in

The contract to supply 7.1 million pounds of uranium concentrate (about 2,730 tonnes uranium) to India's DAE was worth around Canadian Dollars 350 million (\$262 million). The government of the Canadian province of Saskatchewan stated on 5 December that the shipment consists of uranium mined and milled at Cameo's McArthur River and Key Lake operations in northern Saskatchewan.

northern Saskatchewan. Saskatchewan premier Brad Wall said, "India has just received its first shipment of Saskatchewan uranium under the Canada-India nuclear cooperation agreement, and today we mark the economic milestone for our uranium mining industry and our province." ...

Source: <http://economictimes.indiatimes.com/>, 06 December 2015.

CHINA-SOUTH KOREA

China, Korea Extend Nuclear Safety Cooperation

Following a meeting in Beijing on 26 November, the head of China's National Nuclear Safety Administration (NNSA), Lee Ganjie, and the chairman of South Korea's Nuclear Safety and Security Commission (NSSC), Lee Unchul, signed the MOU. In a statement, the NSSC said the purpose of the MOU is to "strengthen mutual collaboration in order to ratchet up the level of safety in the area of nuclear energy".

Among the areas of cooperation under the MOU are: research and development of nuclear safety technology; nuclear safety regulation and the compilation and implementation of safety regulations; safety inspections of nuclear power plants; and nuclear power plant construction and operating experience feedback. It also covers equipment supervision and administration; nuclear emergency preparedness; radiation

monitoring and protection; safety in radioactive waste management; as well as other areas that could be mutually agreed upon later.

The cooperation is to be carried out through the exchange of information and staff, as well as by launching joint studies, NSSC said.

In addition to the MOU, the NSSC and NNSA also signed a specific agreement on environmental radiation monitoring. Through this agreement they will jointly investigate environmental radiation and assess its impact under both normal and emergency circumstances. Over the next three years, China and South Korea will collaborate in the exchange of environmental radiation analysis technologies and monitoring documents and establish a system that enables them to share real-time information on environmental radiation.

A separate cooperation agreement was also signed the same day between the Korea Institute of Nuclear Safety (KINS) and China's National Emergency Response Technical Assistance Centre (NNERTAC). Under that agreement, KINS and NNERTAC will strengthen their bilateral cooperation in nuclear safety technology.

Source: <http://www.world-nuclear-news.org>, 30 November 2015.

INDIA-JAPAN

Japan Gives India its Second Most Important Nuclear Deal

Since 2010, India and Japan have been engaged in intensive negotiations on a civil nuclear agreement, which has challenged all Japanese notions of its unique nuclear position in the world. In the last weeks, Amandeep Gill in MEA and later foreign secretary S Jaishankar traveled to Japan to "freeze" the text of what will become India's second-most valuable

international civil nuclear agreement. Why did Japan give in?

First, there has been a political alignment between India and Japan (both Manmohan Singh and Narendra Modi have invested personally in building this relationship over the years). This meant a deeper political push to what would be a very difficult deal. Abe will have to get this agreement through the Japanese parliament, where he is sure to face a pushback from

Japanese lawmakers who may not be as convinced about erstwhile nuclear outlier, India.

However, top Japanese officials speaking to TOI point to a different calculation within the Tokyo administration that may have tilted the scales. China's ability to quickly reverse engineer entire plants, trains etc and position themselves as global manufacturers has shaken Japan.

China has already taken the design of Westinghouse's AP1000 nuclear power plant, reverse engineered it and is rolling out the rebadged CAP1000, one of the first users of which will most likely be Pakistan. In high speed railways too, China copied Japanese and German designs to become a market leader - only recently, Japan lost out on a big high speed railway contract to the Chinese in Indonesia.

At this point in time, the Japanese nuclear industry is stalled, as after Fukushima, Japan has not yet started building new plants. The west, Japan's traditional clients, too have

stopped. China continues to build however. It's this reality that prompted Abe to tell his senior officials, "economic choices are security choices." The deal, once completed, will make it easier for companies like Westinghouse and Areva to go ahead with their nuclear investments in India, all of which needed India to have a nuclear pact with Japan.

China has already taken the design of Westinghouse's AP1000 nuclear power plant, reverse engineered it and is rolling out the rebadged CAP1000, one of the first users of which will most likely be Pakistan.

It's this reality that prompted Abe to tell his senior officials, "economic choices are security choices." The deal, once completed, will make it easier for companies like Westinghouse and Areva to go ahead with their nuclear investments in India, all of which needed India to have a nuclear pact with Japan.

In the past few years, as Japan has gone slow on the deal, the Indian nuclear environment too has undergone significant changes. Early this year, India completed the administrative arrangements with the US on the India-US nuclear deal, addressing the tough issue of "tracking" of imported nuclear material in Indian plants. The resolution of this issue cleared a major hurdle with Japan.

Second, a deal between Areva and L&T signed during Modi's visit to Paris earlier this year means that not far in the future, L&T could be building complex and sophisticated reactor components in India, bringing down their cost, but also giving companies the option to source from places other than Japan. Currently, L&T is upgrading its manufacturing facilities under the collaboration. With this deal, companies could expand their sourcing options.

Third, India and South Korea operationalized their bilateral nuclear deal last winter. This would help Indian companies to work with their Korean counterparts on nuclear R&D and manufacture of spares for nuclear plants.

While South Korea manufactures nuclear power plants also based on the Westinghouse design (in a spectacular push as few years ago, they swiped a UAE nuclear contract from under the nose of the stately French company Areva), they don't yet have complete control over all critical technology, specially fuel rods. But again, the deal expanded India's choices.

It is in this environment that Japan decided to no longer remain an outlier, despite India being an outlier of the global NPT architecture.

Source: Indrani Bagchi, The Times of India, 13 December 2015.

USA–PAKISTAN

US Experts Oppose Civil - nuclear Deal with Pakistan

US lawmakers and experts have expressed their dissatisfaction with the American move to pursue

a civil-nuclear deal with Pakistan by alleging that the country has long had links with terrorist groups and they also claimed that Pakistani scientists had even discussed making nuclear bombs with Osama bin Laden.

"Pakistani scientist even met Osama bin Laden in 1998 to discuss, how to create a nuclear bomb. The full extent of the (AQ Khan) network's illicit proliferation remains unknown because Pakistan just would not come clean. Pakistan's ties with terrorists do not end with discussions about nuclear weapons," Congressman Ted Poe said. Pakistan has a history of supporting terrorist proxies by way of increasing its leverage in the region, he said. "Pakistan maintains close links with the Afghan Taliban, even allegedly holding direct meetings with senior leaders and coordinating attacks," he said.

US lawmakers and experts have expressed their dissatisfaction with the American move to pursue a civil-nuclear deal with Pakistan by alleging that the country has long had links with terrorist groups and they also claimed that Pakistani scientists had even discussed making nuclear bombs with Osama bin Laden.

Instead of talking about a civil nuclear deal, the US should talk about consequences to Pakistan for its "bad behaviour", said Poe, chairing the Congressional hearing on 'Civil Nuclear Cooperation with Pakistan: Prospects and Consequences' by

House Foreign Affairs Subcommittee on Terrorism, Non-proliferation and Trade.

Pakistan continues to support terrorist groups that have killed American troops, he alleged. "This has got to cease." Subcommittee Ranking Member Bill Keating said no nuclear deal is likely to happen with Pakistan in the near future. Recent talks between US and Pakistan on this topic seemed preliminary and Pakistan is unlikely to accept any constraint on its nuclear arsenal on which the US would insist. Keating said several analysts fear that Pakistani nuclear weapons could fall into the hands of terrorists. Pakistan has a history of proliferation, he said. Pakistan sold nuclear technology to Iran, Libya and North Korea, he alleged. Keating alleged that elements in the Pakistani government have provided "active support" to extremist organisations like Lashkar-e-Taiba in Kashmir and Haqqani network in Afghanistan. "Perhaps most disturbingly,

Pakistan's intelligence service ISI is reported to provide considerable assistance to LeT in planning the November 2008 terrorist attack in Mumbai," he alleged.

Congressman Brad Sherman said there is no chance that a civil nuclear deal with Pakistan would be approved by the Congress. "Pakistan does not just confuses anyone who studies it. It is in fact confused. Just the military elements are simultaneously fighting terrorists on the ground at great cost and supporting terrorists at the same time," he said.

Source: <http://http://www.hindustantimes.com/>, 09 December 2015.

NUCLEAR SAFETY

INDIA

IAEA Wants India Set up Nuclear Safety Regulator

Even though uncertainty looms large over re-introduction of Nuclear Safety Regulatory Authority Bill in the ongoing winter session due to parliamentary logjam, the IAEA has strongly suggested the government should embed in law, the AERB, an independent regulatory body separated from other entities having responsibilities or interests that could unduly influence its decision making. This imposes an obligation on the regulatory body to discharge its responsibilities in such a way as to preserve its effective independence.

Further, IAEA, in its recent report recommended that the AERB should review the implementation of its policy and existing arrangements to ensure it maintains independence in the performance of its regulatory functions. IAEA team had recently visited India to review country's regulatory framework for nuclear safety applicable to nuclear power plants

The tabling of a fresh bill is necessary as the Nuclear Safety Regulatory Authority (NSRA) Bill 2011 introduced by the UPA government was lapsed. The bill had proposed dissolution of the present nuclear regulator AERB and replace it with the Nuclear Safety Regulatory Authority (NSRA) which will regulate nuclear safety and activities related to nuclear material and facilities.

AERB secretary Hari Kumar told Business Standard,

"The IAEA report acknowledges that AERB has functional independence as a regulator. IAEA did not find any instances where defacto independence was compromised. IAEA has suggested that a legal status be accorded to AERB by law. As far as the bill to establish nuclear safety regulatory authority is concerned, it is expected to come up in the parliament."

Further, IAEA noted that as the governance framework of atomic energy has both the nuclear industry and regulatory body reporting to the Atomic Energy Commission, there isn't clear separation of regulation with the potential to compromise the independence of the AERB.

"The regulatory body should be constituted through a legislative process thus demonstrating clear legal (*de-jure*) independence from the industry. In order to ensure the independence of the regulatory body is clear and transparent the

Government should strengthen the legislative framework by creating in law, the AERB as a regulatory body separated from entities having responsibilities or interests that could unduly influence its decision making," IAEA said in its report.

IAEA said the regulatory body should perform its functions in a manner that does not compromise its effective independence. The staff of the regulatory body shall remain focused on

Congressman Brad Sherman said there is no chance that a civil nuclear deal with Pakistan would be approved by the Congress. "Pakistan does not just confuses anyone who studies it. It is in fact confused. Just the military elements are simultaneously fighting terrorists on the ground at great cost and supporting terrorists at the same time.

IAEA said the regulatory body should perform its functions in a manner that does not compromise its effective independence. The staff of the regulatory body shall remain focused on performing their functions in relation to safety, irrespective of any personal views.

performing their functions in relation to safety, irrespective of any personal views. The competence of staff is a necessary element in achieving effective independence in decision making by the regulatory body.

According to IAEA, the regulatory body should ensure that, in its liaison with interested parties, it has a clear separation from organizations or bodies that have been assigned responsibilities for facilities or activities or for their promotion. The AERB should review the implementation of its policy and existing arrangements to ensure it maintains independence in the performance of its regulatory functions.

Source: Sanjay Jog, Business Standard, 09 December 2015.

CANADA

Activists Want Bigger Nuclear Safety Zones

Environmentalists want the Ontario government to provide evidence for its 10-kilometre limit around nuclear power plants for distribution of potassium iodide (KI) pills that help fight radiation, and say it should be expanded.

Greenpeace and the Canadian Environmental Law Association filed a request under the Ontario environmental bill of rights asking the ministry of health to do an evidence-based review of the policy surrounding distribution of the KI pills. Radioactive iodine is released in the event of a nuclear accident, and the potassium iodide pills can help protect against thyroid cancer. The pills were sent to about 200,000 households and businesses around the Pickering, Darlington and Bruce nuclear stations in October, and were given to another 12,500 people who asked for them.

Greenpeace spokesman Shawn-Patrick Stensil says the 10-kilometre distribution zone in Ontario was established in 1984, and notes New Brunswick has a 20-kilometre zone while Switzerland uses a 50-kilometre area for distribution of the KI pills.

Stensil believes the evidence will show the distribution zone for the pills should be expanded to as much as 50 kilometres.

... Most nuclear issues are a federal responsibility, but off-site safety plans are the province's responsibility. Greenpeace says a little-used section of Ontario's environmental bill of rights requires a government response to their request for a medical review of the policy, and if it refuses, the environmental commissioner must investigate and report to the public.

The city of Toronto's executive committee asked the medical officer of health and office of emergency management to investigate the "appropriateness" of the 10 kilometre zone at nuclear plants and whether it should be expanded to 50 kms. Ontario Power Generation's Pickering nuclear generating station is 50 kms from downtown Toronto.

... The province initially balked at the Canadian Nuclear Safety Commission's order to distribute

A cargo of nuclear waste that arrived in Australia was aboard a ship owned and operated by a web of German companies, registered in the tiny Caribbean islands of Antigua and Barbuda and crewed by a mix of Russian and Ukrainian seafarers.

the pills, insisting the federal regulator didn't have jurisdiction to issue it, so the CNSC made it a condition of renewing licences for Ontario's nuclear plants. "The federal regulator stepped

into the provincial realm because it felt Ontario was avoiding its responsibility to protect the public in the event of a nuclear accident," said Stensil.

Source: <http://www.thespec.com>, 09 December 2015.

NUCLEAR WASTE MANAGEMENT

AUSTRALIA

'National Security for Sale': Senators' Outrage over Ship's Cargo of Nuclear Waste

A cargo of nuclear waste that arrived in Australia was aboard a ship owned and operated by a web of German companies, registered in the tiny Caribbean islands of Antigua and Barbuda and crewed by a mix of Russian and Ukrainian

seafarers. It brought accusations from an independent Australian Senator that Australia was “tendering out its national security to the lowest common denominator”, and followed expressions of disbelief from major party parliamentarians that the bureaucracy did not check the ownership of foreign vessels operating in Australian waters. The Australian Nuclear Science and Technology Organisation (ANSTO) defended the use of the ship, saying it was nuclear-rated and declared fit-for-purpose by both Australian and French nuclear and maritime safety authorities.

The ship, BBC Shanghai, was chartered by the giant French nuclear company, Aveva. The vessel was met by a flotilla of protestors amid heavy police presence when it docked at Port Kembla to deliver Australia’s first cargo of radioactive waste to be returned after treatment overseas. The waste will be stored at ANSTO’s Lucas Heights facility until the Australian Government chooses a permanent nuclear-waste dump. Revelations of its complicated web of ownership, its registration

in an obscure nation and the make-up of its crew comes two days after Australian Senators from both sides of politics expressed outrage that Australian authorities do not check the ownership of ships plying their trade in Australian waters....

Independent Senator John Madigan said he found it unacceptable that a ship carrying radioactive waste could sail into an Australian harbour when little was known about its ownership or crew, and its previous voyages had been to ports in Angola, Egypt, Russia and China, where he said the level of security could not be guaranteed. ...

The Maritime Union of Australia is fighting proposed changes to the legislation – which were voted down in the Senate – on the grounds that foreign ships operating under flags of convenience and crewed by low-paid foreign seafarers pose potential economic, environmental and national security threats....

Source: <http://www.smh.com.au/>, 06 December 2015.



Centre for Air Power Studies

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

Centre for Air Power Studies

P-284

Arjan Path, Subroto Park,

New Delhi - 110010

Tel.: +91 - 11 - 25699131/32

Fax: +91 - 11 - 25682533

Email: capsnetdroff@gmail.com

Website: www.capsindia.org

Edited by: Director General, CAPS

Editorial Team: Hina Pandey, Arjun Subramanian P, Chandra Rekha, Manisha Chaurasiya

Composed by: CAPS

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