



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

Vol 09, No. 23, 01 OCT. 2015

OPINION – Shalini Chawla

Why Pakistan Will Always Threaten India with A Nuclear Attack

Pakistan national security advisor, Sartaz Aziz, accused India of acting like a regional superpower and said, “We are a nuclear-armed country and we know how to defend ourselves.” The scheduled meeting of the NSAs of India and Pakistan was cancelled by Islamabad citing New Delhi’s refusal to allow an expanded agenda and involvement of the Hurriyat in the talks. Following the cancellation of talks, Aziz came up with a statement threatening the use of nuclear weapons by Pakistan. This threat, that of using nuclear weapons against India, from Pakistan, is not new and other members of its establishment have made similar statements in the recent past. Why does Pakistan rely heavily on the nuclear threat? Why does even something like cancellation of talks, which is an effort towards normalisation of bilateral relationship, result in a nuclear threat by the Pakistani establishment?

Islamabad initiated the development of the nuclear weapon programme with full rigour after the defeat in the 1971 war and the creation of Bangladesh. A deep desire to neutralise India’s conventional capability and fear of further

Military has pursued terrorism as a tool against India for four decades now and nuclear weapons have served as a shield for conducting acts of terror. Terrorism in Kashmir and other parts of India such as Punjab accelerated much more after Pakistan acquired nuclear capability in 1987. Pakistan has used nuclear weapons to carry on terrorism on the sly and to prevent a conventional war.

disintegration of Pakistan were the most compelling factors for Pakistani leadership to go nuclear. Military has pursued terrorism as a tool

against India for four decades now and nuclear weapons have served as a shield for conducting acts of terror. Terrorism in Kashmir and other parts of India such as Punjab accelerated much more after Pakistan acquired nuclear capability in 1987. Pakistan has used nuclear weapons to carry on terrorism on the sly and to prevent a conventional war. Threat of nuclear weapons has been used rather conveniently and frequently by the Pakistani leadership during times of crisis.

CONTENTS

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

Since the objective of the nuclear weapons has been to neutralise India's conventional capability and also to avoid Indian retaliation to Islamabad's acts of terror, Pakistan's penchant for the adoption and excessive reliance on "first use" doctrine was not surprising. Although the assertion – that of using nuclear weapons first – has varied with changing strategic scenarios, Islamabad has very often stated that it could and

Being crippled with the inherent problems of extremism, unemployment and low growth, Pakistan significantly lags behind India on most of the parameters of national security. Its excessive reliance on nuclear weapons to project its power emerges from its weaknesses within.

would use nuclear weapons as and when it would feel the need. However, it did take a stance during the 2000-10 period that use of nuclear weapon would be the last resort option for Pakistan. What's not clear is what determines "last resort" for Pakistan?

Pakistan has the fastest growing nuclear arsenal in the world with reportedly 120 warheads or even more. With Chinese assistance, it has also developed land-based ballistic missiles up to the range of 2,500km, as well as built up the cruise missiles – Babur and Ra'ad. It is very proud of having developed tactical nuclear weapons (Nasr) to be used in the battlefield to further deter India from any form of conventional retaliation. Pakistan has excessively relied on nuclear weapons for the last three decades and is likely to continue to do so since it has failed to build other strengths or overcome its fundamental challenges. Its most

daunting problems include economic stress, power shortage and rising extremism in the society. Raging insurgency has been difficult for the military to control. TTP has been launching repeated terrorist attacks, despite military's claim that it has managed to hit the insurgent factions on the borders with the ongoing major operation – Zarb-e-Azb.

Being crippled with the inherent problems of

extremism, unemployment and low growth, Pakistan significantly lags behind India on most of the parameters of national security. Its

excessive reliance on nuclear weapons to project its power emerges from its weaknesses within. It has failed to develop any fundamental strength and support its youth, who seem to be trapped in the culture of violence, terrorism, unemployment and, very importantly so, an extreme identity crisis. Until Pakistan

focuses on building its economy with consistent improvement and investments over a sustained period, its insecurity as a state is unlikely to go away.

Repeated threats of using nuclear weapons are not an answer to deal with internal weaknesses and challenges. Also, with India's officially declared doctrine of assured massive retaliation, a nuclear attack by Pakistan would result in a significant retaliatory nuclear strike leading to huge destruction in Pakistan. The use of nuclear threats again and again will also not allow any productive steps in the direction of normalisation of the hostile relationship between the two countries.

Source: <http://www.dailyo.in>, 18 September 2015.

OPINION – Rod Lyon

Rip Nuclear Disarmament?

There's an unfortunate truth about nuclear disarmament: it's further away now than it was in 1995 when the NPT was indefinitely extended. NPT extension capped a number of positive milestones, not least the end of the Cold War. Things have soured over the past 20 years. They've even soured over the last six, so disarmament's also further away now than it was in 2009, when President Obama spoke so warmly in Prague about the objective.

There's an unfortunate truth about nuclear disarmament: it's further away now than it was in 1995 when the NPT was indefinitely extended. NPT extension capped a number of positive milestones, not least the end of the Cold War. Things have soured over the past 20 years. They've even soured over the last six, so disarmament's also further away now than it was in 2009, when President

Obama spoke so warmly in Prague about the objective. And that suggests the tide's going out on nuclear disarmament, not coming in. If so, should we be lowering our expectations in the arms control field to something a little more achievable, namely a safe, secure and resilient nuclear order?

What determines whether a nuclear order's resilient or not? We don't have a large number of such orders to investigate empirically, so this post is intended to unpack four factors which I believe determine resiliency: geopolitical settings, technologies, actors and norms. Geopolitically, the world's turbulent. Great power tensions are rising, not receding. They're indisputably rising between the US and Russia, but I think they're also rising between the great powers of Asia. That might yet have implications for how nuclear weapons are seen in Asia: previously they've been seen primarily as a sub-regional problem (for Northeast Asia and South Asia).

Moreover, there's a worrying dynamism about conventional force relativities. Not too many years ago, it was a standard Western argument in favor of nuclear disarmament that the US was preeminent at the conventional force level. Now that's less certain, and the case for disarmament seems to have a stronger humanitarian flavor. And, finally, the Asian security system seems to be moving from a US-centred one towards a condition of loose balancing, which is making it more difficult for Washington to assure its partners and allies. In short, geopolitical turbulence seems to be driving a reprioritization of nuclear weapons and strategies.

Technologically, nuclear arsenals are experiencing a wave of innovation. Especially in Asia, we're seeing the emergence of MIRVed and MARVed ballistic missiles, and mobile and sea-launched missiles. Precision-strike conventional weapons and gradually improving ballistic missile defenses

complicate the picture. There are opportunities for arms control in that technological space, not least because one innovation can sometimes be traded off for another, but a high technological churn factor—added to existing historical asymmetries—also makes broad agreements difficult.

By contrast, the actors in the nuclear world are changing only slowly. There are more of them than you might think, though. If we're looking for states whose security policies are entangled with nuclear weapons, that's not just the nine nuclear weapon states. It also includes potentially 'repentant' states among the NPT signatories—like Iran—plus the nearly 40 states who benefit from extended nuclear assurance relationships with the US. Sub-state actors might eventually join that list, but—thankfully—haven't so far. Still, the list of nuclear 'actors' is typically worrisome for two reasons: number and identity. In recent decades, we've seen the actual nuclear club become less exclusive, and that trend looks likely to continue.

And, finally, I think nuclear norms are changing slowest of all. Those norms suggest that direct use of nuclear weapons should be an option of last resort, that nuclear weapons require special efforts to ensure their safety and security, and that possession of nuclear weapons is an abnormal rather than a normal feature of statehood (unlike passports and national airlines). All seem comparatively durable, bringing a degree of ballast to the nuclear order.

So what's the key challenge? It seems to me that the pace of strategic change and technological innovation are the two factors powering the Bunsen burner under the current nuclear order. The actors and norms are a little more settled—sources of ballast among the turbulence. True, a less settled strategic environment might well constitute an important driver towards nuclear proliferation, especially if US allies start to worry about the credibility of US assurances in a less

Technologically, nuclear arsenals are experiencing a wave of innovation. Especially in Asia, we're seeing the emergence of MIRVed and MARVed ballistic missiles, and mobile and sea-launched missiles. Precision-strike conventional weapons and gradually improving ballistic missile defenses complicate the picture.

US-centered world, so we can't be complacent about actors. But if we're aiming for a safe and secure nuclear order for the foreseeable future, we need to grapple principally with shifting strategic relativities and technological developments.

The problem, of course, is that those factors aren't easily tamed. We can and should work the problem of great-power relationships, both within Asia and beyond. And we might be able to add more transparency to force balances and technological innovation, but attempts to do so are scarcely novel. Finally, we need to revisit existing crisis stability arrangements, accepting that a riskier world lies before us and building structures and arrangements we can use when things go awry. None of those approaches will bring nuclear disarmament much closer, I'm afraid. But they just might help us navigate some turbulent waters.

Source: <http://nationalinterest.org/>, 14 September 2015.

OPINION – Andrea Berger

Pacifism Bill: Why Japan Won't Build a Nuclear Weapon Quickly

There's a war of words going on in Asia right now. Japan's upper house of parliament approved a controversial security bill that would allow it to engage in defensive military action overseas in the event that the national security of its allies is severely threatened. For the first time since the end of World War II, Japanese troops can deploy in overseas operations in a combat role in support of its allies; in other words, for collective self-defense. Japanese Prime Minister Shinzo Abe's attempts to explain the change to domestic and international audiences have not gone smoothly. He has faced opposition at home, with fist fights breaking out between lawmakers debating the bill.

In the wider region, China, which Japan perceives

to be one of its greatest security threats, has raised the specter of a less-restrained Japan with possible nuclear weapons ambitions. China itself has nuclear weapons, making its first test 1964. Chinese officials and experts have periodically tied Japan's reinterpretation of its military posture to the country's domestic nuclear capability in order to raise concerns that Japan could in future become more aggressive. While it is reasonable to debate the new security bill, such insinuations are unwarranted. Here's why Japan is unlikely to ever build a nuclear bomb. Since the 1960s, Tokyo has developed one of the most advanced civilian nuclear energy programs that exists amongst the international community.

That program generates approximately one third of the country's electricity at present, but could in theory also be used to produce material for use in a nuclear weapon. Some assess that the scale and sophistication

of Japan's nuclear infrastructure would enable it to build a nuclear weapon in a matter of months, should the unlikely political decision be taken to do so. Strategic rival China has sought to draw attention to this fact, issuing loud warnings over Japan's stocks of nuclear material, for example. But it should be noted that under the terms of the NPT – which Japan ratified in 1976 – states are entitled to peaceful nuclear technology for energy purposes if they forswear nuclear weapons.

To ensure that the country's nuclear sites remain exclusively for peaceful use, they are subjected to intensive scrutiny by the IAEA in Vienna. The Agency consistently verifies the accuracy and completeness of Japan's declarations regarding its nuclear facilities, material, and activities and conducts monitoring and inspections at relevant facilities. Its role in Japan will continue to be particularly important in order to dispel any fears that the country may harbor nuclear weapons intentions. China and the IAEA are not the only ones following Japan's nuclear activity closely.

To ensure that the country's nuclear sites remain exclusively for peaceful use, they are subjected to intensive scrutiny by the IAEA in Vienna. The Agency consistently verifies the accuracy and completeness of Japan's declarations regarding its nuclear facilities, material, and activities and conducts monitoring and inspections at relevant facilities.

Two other audiences are noteworthy. The first is Japan's public, who have become increasingly wary of the risks and dangers associated with nuclear technology – whether for civilian or military applications – following the disaster at Fukushima in 2011. The second is the country's closest ally, the US, who is similarly attentive to the state of Japan's nuclear program. In fact, it is because of Japan's alliance with the United States that the former has even less of an incentive to build a nuclear weapon. In order to guarantee the security of Japan against major threats in its region, whether a militarily assertive China or a belligerent and nuclear-armed North Korea, Washington has vowed to respond to any serious armed aggression against Japan using whatever means necessary, including nuclear weapons.

By demonstrating the depth of its resolve to defend Japan, the US hopes to deter any potential aggressors from attacking in the first place. US troops stationed in Okinawa are a visible reminder of the alliance and the commitment that underpins it. As long as Japan believes in the strength of the US's so-called "extended deterrence" guarantee it is unlikely to see any merit in having its own nuclear weapons capability. For this reason, both countries work tirelessly to ensure the credibility and durability of their defence partnership – an immeasurably important aim. Despite what many may think, the Abe administration sees the new security bill as part of this broader effort to contribute to a two-way military relationship – not as a legal green light for offensive action. The bill creates the framework for Japan to give as much to the relationship as it receives, by enabling it to come to the aid of the United States if necessary.

More than anything else, history is likely to undermine any temptation Japan might have to build a bomb. Japan was the first and only country to ever be attacked with nuclear weapons. Over 100,000 Japanese citizens were killed in the

August 1945 bombings of Hiroshima and Nagasaki. Seventy years on, Japan's nuclear history will not be forgotten any time soon. Indeed, it is because of that history that Japan has become one of the most active signatories of the NPT. Tokyo has invested significant resources into preventing the illegal spread of nuclear weapons-relevant materials and technology, promoting the conditions needed for nuclear disarmament, and reminding the world of the grotesque effects of the use of an atomic bomb. The non-proliferation norm is one that Japan will have little incentive to abandon in the short, medium, or likely even in the long-term. Contrary to the suggestions of some watching legislative developments in Japan, the new security bill is not going to change that.

Source: <http://edition.cnn.com/>, 20 September 2015.

OPINION – Miklos Gaspar

Nuclear Power Forms an Important Pillar of Many Countries' Climate Change Mitigation Strategies

The need for climate change mitigation is a salient reason for an increasing number of countries considering nuclear power within their national energy portfolios, according to IAEA experts and government sources. "Concerns about climate change is one of the drivers for countries to introduce or to expand their use of nuclear power," said David Shropshire, Head of the IAEA's Planning and Economic Studies Section. Other factors include growing energy demands and the desire to increase energy security and reduce dependence on volatile fossil fuel costs, he added.

New nuclear power stations will help the United Kingdom reduce its greenhouse gas emissions by 80% by 2050 and secure its energy supply, according to the UK Government's policy paper *2010 to 2015 Government Policy: Low Carbon*

As long as Japan believes in the strength of the US's so-called "extended deterrence" guarantee it is unlikely to see any merit in having its own nuclear weapons capability. For this reason, both countries work tirelessly to ensure the credibility and durability of their defence partnership – an immeasurably important aim.

Technologies. "Nuclear power is low carbon, affordable, dependable, safe and capable of increasing the diversity of energy supply," the paper says. France has the fourth-lowest CO₂ emission rate per GDP among Member countries of the OECD "thanks to its fleet of nuclear power plants," says the French Government's sustainable energy policy paper.

Nuclear power has saved the release of an estimated 56 giga tonnes of CO₂ since 1971, or close to two years of global emissions at current rates, according to the IEA latest *World Energy Outlook*. By 2040, nuclear energy will have prevented the release of four years' worth of CO₂ emissions.

Nuclear power has saved the release of an estimated 56 giga tonnes of CO₂ since 1971, or close to two years of global emissions at current rates, according to the IEA latest *World Energy Outlook*. By 2040, nuclear energy will have prevented the release of four years' worth of CO₂ emissions.

Nuclear Power is a Key Part of China's Clean Energy Plan: Increasing the capacity and share of nuclear power in its energy mix is one way that will help China meet its pledge to reduce greenhouse gas emissions after 2030. China, which alone accounts for over a third of nuclear power reactors under construction around the world, sees nuclear power as a clean source of energy that will help combat both global and local environmental problems, while contributing to the country's growing economy, said Ambassador Jingye Cheng, China's Permanent Representative to the United Nations and Other International Organizations in Vienna.

China has 23 nuclear power reactors in operation, 27 under construction and several more about to start construction. Additional reactors are planned, including some of the world's most advanced, to provide more than a three-fold increase in nuclear capacity to 58 GW by 2020. The reactors under construction will have a combined capacity of 30 GW.

"Climate change is a common challenge faced by all nations, and it is important that the international community joins together to combat this challenge," said Cheng, who is China's ambassador to the IAEA. "China will do its part, and nuclear energy is part of the solution." Making its economy more energy efficient and increasing

the share of renewable energy sources are other important parts of China's climate change mitigation plans, he added. "While for the time being still relying on fossil fuel sources, we are putting more emphasis on the development of low-carbon resources," Cheng said. The country's National Energy Development Strategy Action Plan set a 15% target for non-fossil energy sources by 2020, compared with just under 10% at the end of 2013.

China has 23 nuclear power reactors in operation, 27 under construction and several more about to start construction. Additional reactors are planned, including some of the world's most advanced, to provide more than a three-fold increase in nuclear capacity to 58 GW by 2020. The reactors under construction will have a combined capacity of 30 GW. China is facing a grave ecological situation and is taking steps to address climate change, Cheng explained. Its national plan on climate change includes the establishment of a carbon emission trading market, as well as deepening international cooperation on the reduction of greenhouse gas emissions under the principle of 'common but differentiated responsibilities'. In its nuclear energy expansion plans, the country is focusing on the construction of large pressurized water reactors and the development and piloting of high temperature gas cooled reactors and fast reactors, Cheng said.

China's track record in the safe and secure operation of its nuclear power plants and the piloting of its new, third generation reactor design position it as a global player in nuclear technology, Cheng said. "We stand ready to share our expertise and technology with, and provide

financial support to, newcomer and expanding countries.”

Source: <https://www.iaea.org>, 22 September 2015.

OPINION – Mason Woolley

Iran’s Development of Nuclear Energy Facilitates Weapons Creation

In 2009 at Cairo University in a speech, President Obama stated, “And any nation – including Iran – should have the right to access peaceful nuclear power if it complies with its responsibilities under the NPT.” It has been advocated by the White House that all nations of the world including Iran have the right to develop nuclear energy; the development of nuclear energy facilitates and enables the creation of nuclear weapons. The Iran deal, officially known as the Joint Comprehensive Plan of Action, is being proposed as a diplomatic solution to Iran’s nuclear weapons development, and only limits enrichment and research of nuclear energy for 15 years and imposes a total of 25 years of inspections. The deal does not dismantle Iran’s nuclear facilities or prevent its government from developing nuclear weapons and gives Iran the power to develop nuclear energy.

On one hand, Americans can support the deal as a diplomatic and peaceful solution and hope an enemy will turn into a friend; on the other hand, Americans can question the wisdom of a deal that can enable our enemy and another nation in the world to possess the incredible destructive power of nuclear missiles. The White House has shown no interest in engaging in public debate or discussion – it sought approval from the UNSC before the American people and nation; senators opposed to the deal, like Charles Schumer (D-N.Y.), have been vilified; and fast-track authorization empowers the presidency by denying Congress the ability to amend the treaty or members of Congress to filibuster it. The approach of the White House is that the Iran deal is one that is

morally right and best for the world; however, the White House is acting in a mistaken belief based on an authority it does not have. It is the prerogative of our country to decide the future of national security. The Iran deal must be approved or disapproved with consent. There is false sense of urgency the deal must be voted on this September – Congress should immediately extend the date of the vote.

Source: <http://thehill.com>, 14 September 2015

OPINION – Nancy Jane Teeple

An Arctic Nuclear Weapon- Free Zone: Can there be Cooperation Under the Counterforce Dilemma?

The promise of stability- enhancing and confidence- building measures under the New START agreement is waning. Obama’s Prague Agenda and New START signed between the US and Russian Federation in Prague on 8 April 2010, hoped to see reductions in nuclear stockpiles and delivery systems by 2018 – an agreement made at a time of significantly reduced tensions between the former nuclear competitors. The renewal of tensions between the West and a revanchist Russia under President Putin, particularly apparent in the Ukraine crisis, threatens the longevity of arms control.

The possible results of this trend are worrisome. We could see the deterioration of the INF treaty and any prospects for global disarmament enshrined in the NPT, and promoted by groups like Ploughshares and the Nuclear Security Project. These conditions have implications for proposals for an Arctic NWFZ promoted by notable individuals from foundations such as the Canadian Pugwash Group, Gordon Foundation, and Science for Peace.

The fear of nuclear weapon use for the most part declined since the end of the Cold War. The reduction of tensions between the East and West encouraged bilateral arms control negotiations not

The fear of nuclear weapon use for the most part declined since the end of the Cold War. The reduction of tensions between the East and West encouraged bilateral arms control negotiations not seen since détente in the 1970s. The emergence of movements promoting a world without nuclear weapons reinforced notions that the nuclear era was over, and that remaining stockpiles had to be destroyed to prevent potential accidents.

seen since détente in the 1970s. The emergence of movements promoting a world without nuclear weapons reinforced notions that the nuclear era was over, and that remaining stockpiles had to be destroyed to prevent potential accidents. Not surprisingly, nuclear weapons are considered by many to be a relic of the Cold War.

However, following the rise of Putin, the emergence of asymmetric threats, and new near-peer competitors such as China, the Bush administration withdrew from the ABM Treaty and pursued rapid modernization of the US nuclear triad in order to counter the threat of WMD from rogue nations and terrorists. These actions reinvigorated the security dilemma between the US, on one side, and China and Russia, on the other, with the latter two viewing the development of offensive nuclear weapons systems as threatening – in so far as the development of counterforce capabilities geared towards targeting another state's nuclear arsenal can be seen as both a challenge to their second-strike capabilities and a repudiation of mutually assured deterrence. A new arms race ensued. Both China and Russia are modernizing their own nuclear arsenals, and Russia has ignited a new Cold War over the North with the renewal of long-range bomber patrols near the airspace of NATO member Arctic states.

Geopolitically, the Arctic may become a region of military confrontation, particularly with the rapid militarization by the Arctic-5 states (Canada, Norway, Denmark, Russia, and the US), especially Russia, in enhancing their Arctic capabilities to defend economic interests in the region. In addition, although the United States, Russian, and NATO articulate an interest in reducing their nuclear arsenals and missions, they also reaffirm reliance on a credible deterrent capability so long as nuclear weapons are in the world.

This is the context within which global players

must consider the feasibility of an Arctic NWFZ. Is such an initiative in the national interests of the US and Russia? Would such a régime provide the stability needed for further cooperation on arms control and disarmament? What sort of role could smaller but influential states, such as Canada, play in encouraging bilateral negotiations to consider reducing nuclear forces in the Arctic? These are the questions that must guide any Arctic NWFZ initiative. Options must also be considered that involve compromises and concessions in order to minimize possible defections. What sort of agreement could find receptivity in both the United States and Russia?

An Arctic NWFZ must be tailored to the unique geographical and geopolitical character of the region and boundary options may not start out as comprehensive zones.

Another option involves establishing an exclusion zone in the Canadian Basin, located north of the Beaufort Sea. If Canada's claim to the seabed that extends into the Basin is recognized by the UN Commission on the Limits of the Continental Shelf, Ottawa may be able to promote a NWFZ through administering its sovereign rights to protect the sea life by prohibiting nuclear-carrying vessels that pose a threat to the environment.

Inclusion and exclusion zones involving the seabed, subsea, surface, and airspace must be considered. It might be prudent to explore provisions from existing NWFZs and other regional treaties banning nuclear weapons, such as the Antarctic Treaty, Seabed Treaty, and Outer Space Treaty. Limited geographical zones have been proposed, such as the

Northwest Passage, which would open up opportunities either for resolution of the disputed status of the strait, or provide options for joint Canada-US monitoring and enforcement.

Another option involves establishing an exclusion zone in the Canadian Basin, located north of the Beaufort Sea. If Canada's claim to the seabed that extends into the Basin is recognized by the UN Commission on the Limits of the Continental Shelf, Ottawa may be able to promote a NWFZ through administering its sovereign rights to protect the sea life by prohibiting nuclear-carrying vessels that pose a threat to the environment.

In establishing an Arctic NWFZ régime that would be receptive to the US and Russia, a potential option has been proposed by experts at Pugwash. This would be a treaty to prevent nuclear weapons in the entire region above the Arctic Circle. In order to be strategically feasible, this option would have to be adapted to the counterforce postures of the US and Russia by allowing the continuation of nuclear deterrence operations, as well as the replacement of nuclear warheads with conventional alternatives. The modernization of the US nuclear triad is already being adapted for conventional counterforce options on both ballistic missile and air delivery systems. Russia is also developing a hypersonic conventional delivery system – an answer to the US Conventional Prompt Global Strike program. Like the United States, Russia's air and sea-based deterrents can be outfitted with conventional warheads. This option acknowledges the reality that Russia's Northern Fleet, which includes its ballistic missile submarines, is based mainly above the Arctic Circle. Russia would not likely be receptive to any arrangement that would restrict its sea-based deterrent, placing it at a strategic disadvantage to the United States.

These options may have been possible before the spring of 2014. However, under current conditions getting the US and Russia to the negotiating table to consider new arms control agreements does not seem feasible. Relations between the US/ NATO and Russia can be characterized by Russia's mistrust of NATO in Eastern Europe, accusations on both sides of violating the INF Treaty, Russia's perception of the threat posed by US offensive counterforce weapons, Russia's growing declaratory reliance on nuclear weapons, and the growing military and economic competition in the Arctic pitting Russia against the other Arctic states. Russia's annexation of Crimea in early 2014, followed by military interventions in Ukraine's eastern provinces of Donetsk and Luhansk, has intensified conditions of mutual mistrust, threat, and uncertainty. Such conditions tend to militate

against the potential for an Arctic NWFZ and must be mitigated before the nuclear powers are likely to consider cooperation. Unfortunately, a new détente is very unlikely in the foreseeable future.

Source: <http://cimsec.org/>, 23 September 2015.

NUCLEAR STRATEGY

RUSSIA

Russia Pledges Counter Measures if US Upgrades Nuclear Arms in Germany

Russia would be forced to take counter measures to restore the balance of power in Europe if media

Russia would be forced to take counter measures to restore the balance of power in Europe if media reports that the US plans to upgrade its nuclear presence in Germany are true, President Vladimir Putin's spokesman.

reports that the US plans to upgrade its nuclear presence in Germany are true, President Vladimir Putin's spokesman said on 23 September. The spokesman, Dmitry Peskov, was commenting after Germany's ZDF TV Channel reported that

the US intended to place 20 B61-12 nuclear bombs at the Büchel Air Base later this 2015. "This could alter the balance of power in Europe," Peskov told reporters. "And without doubt it would demand that Russia take necessary counter measures to restore the strategic balance and parity."

Source: <http://www.reuters.com>, 23 September 2015.

UK

Ageing British Nuclear Submarine in Top-secret Mission is Undergoing Repairs Off the Coast of Iran

A British nuclear submarine has been caught on camera after it apparently became stricken with technical problems while on a top-secret mission in one of the most dangerous parts of the world. Satellite images show the Royal Navy vessel undergoing repairs at a port less than 100 nautical miles from Iran. The nuclear-powered submarine is pictured docked at Fujairah, one of the United Arab Emirates, in the politically sensitive seaway of the Gulf of Oman.

Blue cabling on the quayside apparently provides electrical power to the vessel while it is being repaired. The images also show a 650ft-long barrier constructed from metal containers which appears to have been erected in an effort to shield the 300ft vessel from public view and protect it from a terrorist attack.

Designed to provide surveillance of enemy installations, it is one of Britain's four Trafalgar Class submarines – HMS Talent, Torbay, Trenchant or Triumph – which entered service 30 years ago and have suffered from increasing problems due to their age. ... 'Something must have gone seriously wrong with her to port there now, publicly announcing her presence in the Gulf of Oman which is effectively a war zone in these troubled times. 'The lack of a surface support vessel or any Special Boat Service commandos in dinghies patrolling the waters around her, or a boom separating her from the rest of the harbour, suggests this visit was forced upon her. 'She has what seems to be an emergency electrical and ventilation hook-up from the quayside, with all of her hatches open.' ...

Source: <http://www.dailymail.co.uk>, 26 September 2015.

USA

US Stations New Nuclear Weapons in Germany

The US is stationing up to 20 of a new type of B 61-12 nuclear bombs at the Büchel air base in the Eifel region. Altogether they have 80 times the explosive power of the nuclear bomb exploded in Hiroshima. This was revealed in the German television program "Frontal 21" on 22 Sep. The stationing of these bombs is part of the renewal of the American nuclear arsenal. "Frontal 21" referred to the current US budget plan, which indirectly refers to these plans, saying that the weapons will be integrated into German fighter-

bombers starting in the third quarter of 2015.

At the same time, additional nuclear weapons locations in Europe are being upgraded with new B 61-12 nuclear bombs. These include the airbases in Incirlik, Turkey and Aviano, Italy.

Der Spiegel already reported last year that the first bombs costing about \$10 billion should be available in Europe in 2020. It said that the expansion of the air base in Büchel will cost an estimated \$154 million and that Germany will cover one-fifth of this.

The US is stationing up to 20 of a new type of B 61-12 nuclear bombs at the Büchel air base in the Eifel region. Altogether they have 80 times the explosive power of the nuclear bomb exploded in Hiroshima. This was revealed in the German television program "Frontal 21" on 22 Sep. The stationing of these bombs is part of the renewal of the American nuclear arsenal.

According to "Frontal 21", the Social Democratic Party (SPD) defence policymaker Thomas Hirschler confirmed that the German government is going to invest €112 million in Büchel over the next few years. Among other things, the runway of the airfield will be fitted with a modern instrument landing system. In plain language, he said, "new, even more dangerous

American nuclear bombs are due to come to Büchel and, in the case of war, would be directed to their targets by German Tornados."

The director of the Nuclear Information Project at the Federation of American Scientists, Hans M. Kristensen, described a possible horrific scenario to "Frontal 21": "In case of war, the nuclear weapons stationed in Germany would be used at the orders of the US president. The US forces would then hand over the nuclear weapons to the German pilots and these German pilots would then attack the target with nuclear weapons."

The stationing is "a hidden American weapons build-up," he said. The new bombs allow "themselves to be steered to the target" and are "much more precise than the nuclear weapons that have been stationed in Germany so far." This is "a new weapon" because the US previously had "no steerable nuclear bombs." ... That nuclear armament is taking place in Germany, and the fact that—after the terrible crimes of the German

military in two world wars—the German military could drop nuclear bombs is horrifying. It also violates German and international laws.

Articles I and II of the nuclear weapon treaty signed by Germany in 1969 forbids the acceptance of control over nuclear weapons or the transmission of them elsewhere. In the text “Humanitarian International Law in armed conflicts,” a set of regulations for soldiers in the German armed forces from June 2008, it reads: “In particular the deployment of the following weapons by German soldiers in armed conflict is banned: anti-personnel mines, nuclear weapons, bacteriological weapons and chemical weapons (for example, poison gas).”

The renewal of US nuclear weapons in Germany is a provocation against Russia and raises the danger of a nuclear war in Europe.

Moscow’s foreign office spokeswoman Maria Zakharova told “Frontal 21”: “It disturbs us that states that actually have no nuclear weapons carry out the deployment of these weapons and, indeed, within the framework of the NATO practice of nuclear sharing.” A Russian government spokesperson warned: “That could change the balance of forces in Europe. And without a doubt, that would require Russia take retaliatory action to re-establish strategic balance and parity.”

The current edition of *Spiegel Geschichte* (Spiegel History), under the headline “The bomb: The age of nuclear intimidation”, is devoted to the growing danger of a nuclear war. It gives an overview of the massive build-up of arms, which has taken place “above all since the outbreak of the Ukraine crisis”. In an “arms race 2.0,” the nuclear powers are modernizing their nuclear weapons “at great expense”, it says. ...

Source: Excerpted from article by Johannes Stern, <http://www.wsws.org/en/articles/2015/09/26/nuke-s26.html>, 26 September 2015.

US Nuclear ‘Upgrades’ in Europe

Upgrades of six US air bases set to stock modernized B61 nuclear bombs are continuing in Turkey and Europe, according to US and German researchers. They claim Turkey’s Incirlik base stocks at least 50 such US weapons. Modernizations of security perimeters around nuclear bomb vaults and infrastructure at the six US air bases were continuing apace, reported the Frankfurter Rundschau newspaper on 23 September. Moscow reacted on 23 September saying it would take countermeasures if the US placed new nuclear weapons in Germany. “Unfortunately, if this step is implemented it may disrupt the strategic balance in Europe,” said Kremlin spokesman Dmitry Peskov.

The US provided the bulk of the funding but extras such as runway refurbishments came out of the national budgets of the five ‘guest’ NATO partners – Germany, Belgium, Italy, the Netherlands and Turkey. Congress boosted spending in 2011 after an air force review concluded that “most” US storage sites in Europe did not meet US defense department standards. The FR cited the non-governmental Berlin Institute for Transatlantic Security and findings of the nuclear-critical FAS compiled from budgetary data given to the US Congress.

Nuclear Vaults Reinforced: FAS researcher Hans M. Kristensen said commercially available aerial photos showed new perimeter construction works around 12 aircraft shelter-vault complexes at the US Aviano air base in Italy and 21 such aircraft shelters at Incirlik, where the perimeter had double fencing and intrusion detection equipment. Special weapons maintenance trucks were also being replaced and upgraded, he said. Incirlik, close to war-torn Syria, has been used in recent months for US-led airstrikes on jihadist IS militants in Syria.

Those activities have coincided with a Russian military buildup via Tartus, a Soviet-era naval base

Upgrades of six US air bases set to stock modernized B61 nuclear bombs are continuing in Turkey and Europe, according to US and German researchers. They claim Turkey’s Incirlik base stocks at least 50 such US weapons.

in Syria's coastal Mediterranean region of Latakia. Kristensen estimated that Incirlik's vaults currently held 50 B61 nuclear weapons. For the anti-IS operation, US F-16 jets had been relocated from Aviano, Italy to the Turkish NATO base under a "unique" arrangement. "The Turks have declined US requests to permanently base a fighting wing at the [Incirlik] base," he wrote.

Range Depends on Aircraft:

The FR said the B61 nuclear bomb - first devised in the 1960s - had been "modernized" so it could be set to explode at various strengths of up to ten-times the devastation inflicted at Hiroshima, Japan, in 1945. It also has the capability to be steered toward a target placed it between short-range "tactical" and long-range "strategic" atomic weapons, the FR said. "It now comes down to the range of the carrier aircraft," it said. Adding that congressional papers pointed to the development of a so-called B61-13 from 2038.

Refurbished Runway at Büchel: BITS author Orfried Nassauer said investments by Germany's Bundeswehr were scheduled at Büchel, widely believed to be the sole US nuclear-equipped air base in Germany. The base's runway - located in Germany's hilly, western Eifel region - was to be fully refurbished and fitted with a modern instrument-landing system in 2016, he said. A member of German federal parliament's defense committee, SPD Thomas Hitschler recently told the Rhein-Zeitung newspaper that the German government planned to invest 120 million euros at Büchel. German public ZDF broadcasting's investigative magazine "Frontal 21" reported on 21 September that the US planned to station new atomic bombs at Büchel.

Removal Long Demanded: In 2009 and again in 2011, Germany's then foreign minister Guido Westerwelle demanded the removal of all US nuclear weapons presumed to be at Büchel. The demand, made for decades by peace activists,

was backed in a 2010 Bundestag resolution. A "Wikileaks" paper showed later that Chancellor Angela Merkel's foreign policy advisor Christoph Heusgen distanced Berlin from such calls in talks with Washington. The FR said Germany had never been allowed by the US to have access to the B21s. During the Cold War, German Tornado jets located at Büchel had trained with mock metal devices.

The FAS's Kristensen said security upgrades were also under way or planned at the US' Operations Center-Command at Kleine Brogel Air Base in Belgium and a nuclear weapons vault support facility at another air base in Ghedi.

Upgrades also in Belgium and Italy:

The FAS's Kristensen said security upgrades were also under way or planned at the US' Operations Center-Command at Kleine Brogel Air Base in Belgium and a nuclear

weapons vault support facility at another air base in Ghedi, Italy. In July 2015, Italian prosecutors said two arrested IS adherents, a Pakistani and a Tunisian, were suspected of listing Ghedi among their potential targets. The prosecutors said, however, that the site was "never in danger" because the pair, based in Brescia in northern Italy, had not set their plans in motion.

Source: <http://www.dw.com/>, 23 September 2015.

US Nuclear Missile Submarine Surfaces in Scotland

A nuclear-armed US ballistic missile submarine arrived in Scotland amid growing tensions with Moscow over Ukraine and Russia's strategic arms buildup. The submarine, the USS Wyoming, arrived at the British naval base at Faslane, Scotland, on 23 September, 17 September, for what the US Strategic Command said is a routine visit. However, SSBN movements and port visits normally are not announced by the Navy or the Strategic Command, an indication the Wyoming's port call is intended as strategic messaging to Moscow.

The submarine visit "demonstrates the closeness of the US/U.K. defense relationship and our commitment to the collective security of all NATO member states," Stratcom said in a brief statement.

The submarine visit "demonstrates the closeness of the US/U.K. defense relationship and our commitment to the collective security of all NATO member states," Stratcom said in a brief statement. The submarine deployment followed an earlier unannounced visit by a British missile submarine to Kings Bay, Ga., the homeport of the

Wyoming. The Ohio-class strategic submarine carries 24 Trident II nuclear missiles. Missile submarines, known as boomers, are the backbone of the US strategic nuclear arsenal because of their stealth, maneuverability, and firepower.

The submarine deployment also compliments exercises, training, operations, and other military cooperation between US and British forces. The visit will boost the Wyoming crew's familiarization with the region.

A defense official said the Wyoming deployment is part of efforts to provide strategic assurance, bolstering so-called extended nuclear deterrence that US nuclear forces provide for NATO. Stratcom spokesman Maj. Matt Miller said the visit was planned for more than a year and is not a response to regional events, nor "directed at any particular potential adversary." "The US routinely and visibly demonstrates our commitment to our allies through forward presence and operations of strategic forces, including SSBNs," he said.

The submarine deployment also compliments exercises, training, operations, and other military cooperation between US and British forces. The visit will boost the Wyoming crew's familiarization with the region. Naval analyst Norman Polmar said the Wyoming port call is unusual but not unprecedented. "More British SSBNs visit Kings Bay than US subs make port calls in the UK because [the British] test fire Trident missiles on our Atlantic missile range," Polmar said. SSBN is a military acronym for a ballistic missile submarine.

The Wyoming's visit followed the disclosure that Russia is building an underwater nuclear-armed drone submarine known as Kanyon. The drone is in development and is designed for strategic nuclear strikes on US ports and coastal cities, according to Pentagon officials. Russia has been building up its nuclear forces by adding 40 new long-range nuclear missiles, new submarines, and a new bomber. The buildup comes as Russian leaders, including President Vladimir Putin, have issued threats to use nuclear weapons against NATO members over the alliance's opposition to US missile defenses, the Russian annexation of

Ukraine's Crimea, and continued covert action aimed at destabilizing eastern Ukraine.

In addition to the Kanyon, Russia is fielding new attack submarines known as the Yasen-class and a new ballistic missile submarines

known as the Borey-class. Concerns over Russian nuclear threats and comments by Putin on the use of nuclear arms were raised by Defense Secretary Ash Carter in June 2015. "Nuclear weapons are not something that should be the subject of loose rhetoric by world leadership," Carter said during a visit to Europe. "We all understand the gravity of nuclear dangers," he added. "We all understand that Russia is a long-established nuclear power. There's no need for Vladimir Putin to make that point." Carter said Putin's nuclear posturing was "not appropriate behavior."

Canada's military is looking at ways to potentially contribute to missile defence but it has yet to figure out how it would be able to afford such a capability, according to documents obtained by the Citizen. The Pentagon is open to having Canada play some kind of supporting role in its missile defence shield, Canadian military officers say privately.

The defense secretary said the Pentagon and NATO are adopting a "new playbook" to deter and be ready to respond to further Russian aggression. "We are looking at NATO responses that are much more mobile, much more agile, able to respond on short time lines, because that's how events on 23 September unfold, unlike a quarter let alone a half a

century ago," he said.

Source: <http://jewishvoiceny.com/>, 23 September 2015.

BALLISTIC MISSILE DEFENCE

CANADA

Canada Examining Contribution to US Missile Defence in Arctic

Canada's military is looking at ways to potentially contribute to missile defence but it has yet to figure out how it would be able to afford such a capability, according to documents obtained by the Citizen. The Pentagon is open to having Canada play some kind of supporting role in its missile

defence shield, Canadian military officers say privately. US officials have expressed interest, in particular, in Canada's potential contribution of a multi-purpose sensor system in the Arctic which would not only track ballistic missiles but ships and aircraft. That capability could be one of Canada's major future contributions to the joint US-Canadian NORAD.

Canadian defence scientists plan to conduct research into what is being termed "continental surveillance radars," according to an April 2015 outline of research projects compiled by Defence Research and Development Canada in Ottawa. "Desired outcomes (include) enhanced interoperability with NORAD," the document noted. During an April 2015 meeting in Ottawa with industry representatives, navy Commander Mike McEntee also pointed out that the service was interested in missile defence, including "ballistic missile detection and engagement."

The US has outfitted some of its warships with interceptor missiles and uses advanced radars to provide information to its ground-based missile shield. Future Canadian warships could be outfitted with similar capabilities, navy officers have said. In August 2015, Conservative Leader Stephen Harper raised the possibility of Canada taking a role in the US missile defence system. During a campaign stop in Hay River, N.W.T., Harper noted that a Conservative government would consider such an initiative if the country's security was in jeopardy.

In 2014, the Senate defence committee recommended that Canada join the US missile defence shield. Two former Liberal defence ministers, David Pratt and Bill Graham, have also endorsed the idea. In 2005, Liberal Prime Minister Paul Martin decided against Canada's involvement in the controversial US system. The Pentagon has spent about \$100 billion since 2002 on the missile shield but critics say the system still can't destroy incoming warheads.

In April, NORAD commander US Admiral Bill Gortney was asked about the American

government's desire for a new multi-purpose sensor system in Canada's Arctic that could not only detect incoming ballistic missiles but monitor ships and aircraft. Gortney noted that within 10 years the existing radars operated by Canada and the US would be obsolete and would need to be replaced. "We're now just bringing that up through our policy leaders as well as with the Canadian government," he added. Canadian defence officials see the provision of a new radar system in the Arctic as potentially fulfilling part of its contribution to the future of NORAD, according to a September 2013 Department of National Defence briefing note.

But the DND document recently obtained by the Citizen through the Access to Information law raised questions about the lack of money for that and other NORAD-related initiatives. "How do we resource it?" officials asked in the briefing note. "The US is currently managing the impact of significant budget reductions in a time of fiscal uncertainty, and DND/CAF also finds itself with budget constraints." NORAD

conducted a strategic review in 2014 noting the need for improved sensors, communications and infrastructure in the high North in order to remain effective into the future. The estimated life expectancy of the current radars, called the North Warning System, is around 2025, according to DND. That system is comprised of 47 unmanned long- and short-range radar stations stretching from Alaska to Labrador.

Source: <http://ottawacitizen.com/>, 07 September 2015.

Canadian defence scientists plan to conduct research into what is being termed "continental surveillance radars," according to an April 2015 outline of research projects compiled by Defence Research and Development Canada in Ottawa.

NUCLEAR ENERGY

CHINA

Bill Gates's Nuclear Energy Startup: Terra Power Signs Deal with Chinese Counterpart

Clean energy is a big part of the Chinese president's agenda while he's in Seattle. That includes a focus on nuclear power – an issue

that Microsoft founder Bill Gates has been working on. In 2006, Gates helped launch a Bellevue-based company called Terra Power. He invested money in it and became chairman. Terra Power is working on what Gates calls a next-generation nuclear reactor. The reactor that Terra Power is working on uses depleted uranium for fuel. Essentially, it would run on nuclear waste. Gates says that's more fuel efficient and safer.

Terra Power is working on what Gates calls a next-generation nuclear reactor. The reactor that Terra Power is working on uses depleted uranium for fuel. Essentially, it would run on nuclear waste. Gates says that's more fuel efficient and safer.

"It avoids problems of nuclear material for weapons proliferation and it can make a huge contribution to the global goal of having low-cost, clean energy," said Gates. Terra Power Chief Executive Lee McIntire just signed an agreement with China National Nuclear Corporation for the two companies to work together to create this new kind of nuclear reactor. China is trying to invest in other kinds of energy including nuclear as a way to reduce emissions and improve air quality.

Source: <http://www.kplu.org/>, 23 September 2015.

INDIA

NPCIL Searches for Land in Andhra Pradesh for Nuclear Power Plant

The NPCIL is scouting for land in Andhra Pradesh to install a nuclear power plant, following West Bengal government's objections to set up the project in state's Haripur town. BARC director Sekhar Basu who is a board member of the NPCIL, said, "We are looking for a site in some coastal area of Andhra Pradesh where a similar reactor, which was meant for Haripur, will come up." "Talks are on with the state government for a suitable site. Land has to be available," Basu told reporters on the sidelines of a program.

In 2011, the state government had scrapped the proposed 6,000 MW plant in East Midnapore district's Haripur in collaboration with Russia's state-owned nuclear power equipment and service giant Rosatom. Local farmers and fishermen, supported by a number of NGOs, had launched an agitation against the project fearing eviction and loss of livelihood. Basu, however, said if they get permission from the state and Centre, then the project at Haripur will see the light of the day.

"Haripur project is not closed down. If the West Bengal government wants, we can start it anytime. There will be an investment of Rs 100,000 crore. Not only West Bengal, but the entire eastern India will not starve for power anymore if it happens," the Padma Shri awardee nuclear scientist said. He stressed that if we want a GDP growth rate of about eight per cent every year, then the electricity supply should also grow at the same rate. "If

such a big project comes, then there will be no electricity problem. Nuclear is clean and green energy," Basu said, adding that nuclear will be the main source of energy in the future.

Source: *The Economic Times*, 26 September 2015.

PAKISTAN

Pakistan to Generate 40,000 MW Nuclear Power by 2050

Pakistan will produce 40,000 MW of electricity through nuclear power plants by 2050, helping the energy-starved country overcome frequent outages. The announcement was made by Chairman PAEC Muhammad Naeem while addressing the 59th IAEA General Conference

at Vienna in Austria. Installing nuclear power generation capacity of 40,000 MW was part of Nuclear Energy Vision-2050, Radio Pakistan quoted Naeem as saying. The PAEC will help overcome the energy crises in the country as it is making important contributions to the socio-economic sector by bringing home the fruits of peaceful applications of nuclear technology for the masses, he said.

The Commission is currently providing vital service to the nation through its 18 oncology medical hospitals where about 80 per cent cancer patients are being treated each year. He said the PAEC plans to further expand its services to the public by setting up more nuclear medical centres. PM Nawaz Sharif on 16 September ordered the start of construction work on power plants which will use LNG and coals as fuel after chairing a high level meeting to review the progress on LNG Power Plants and Sahiwal Coal Power Plant. In July 2015, Pakistan experienced an acute energy crisis as its financial capital Karachi plunged into darkness twice due to failures at multiple sites run by the country's private electricity provider. The blackouts along with heat wave had claimed the lives of over 1,000 people.

Source: <http://economictimes.indiatimes.com/>, 17 September 2015.

SAUDI ARABIA

Saudis Make Push for Nuclear Energy

While the world's attention has focused on Iran's nuclear ambitions, other players in the Middle East have been laying their own plans to develop nuclear power to meet future energy needs. Saudi Arabia, the most ambitious of the group, has announced plans to build 16 reactors over the next several decades, providing a projected 15% of the country's electricity possibly as early as 2032, according to a Saudi government website. The estimated cost of the program: more than \$80 billion, according to an analysis of the plans by Ali Ahmad, a research fellow and lecturer on

energy policy at Princeton University. Mr. Ahmad says he based his calculation on a roughly \$5 billion price tag for each reactor.

Saudi officials close to the program declined to comment. Advocates of a Saudi nuclear program say it will be essential for the oil-rich kingdom to preserve its strong and stable economy, environment and standard of living. What's more, the country's nuclear ambitions fit the political and diplomatic role it sees for itself in the Middle East as the strategic leader of the Arab world.

"There's a strategic competition going on with Iran," says Jim Krane, energy researcher at Rice University's Baker Institute in Houston. "This is very important for Saudi Arabia." It is a quest fraught with challenges. In addition to facing huge construction costs and the usual environmental and safety concerns, the desert country lacks a pool of native nuclear-engineering talent, and must come up with vast amounts of water for the plants to operate. Like Iran, it also will have to contend with questions about whether its ambitions are totally peaceful.

Mixed Energy Needs: Nuclear energy, however, is increasingly seen as a necessary part of the energy mix for the entire region. For oil importers such as Egypt and Jordan, it offers greater energy security. Oil-rich states such as Saudi Arabia and the United Arab Emirates, meanwhile, also want to diversify their energy mix and keep as much oil as possible available for export. These wealthier countries with their more advanced economies face growing demand for air-conditioning and fresh water as well, needs currently met largely with desalination.

Plans for nuclear power in the Arab Mideast go back to 2006, when the six-member Gulf Cooperation Council—Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates—began to study the feasibility for a nuclear program to help serve the region's domestic electricity and desalination needs. The UAE began construction on a 5.6-gigawatt power

Oil-rich states such as Saudi Arabia and the United Arab Emirates, meanwhile, also want to diversify their energy mix and keep as much oil as possible available for export. These wealthier countries with their more advanced economies face growing demand for air-conditioning and fresh water as well, needs currently met largely with desalination.

plant at Barakah near Abu Dhabi in 2012. The first of four reactors is scheduled to begin operation in 2017. The three other reactors are scheduled to begin operating by 2020, according to the WNA.

Saudi Arabia, meanwhile, has signed nuclear cooperation agreements with France, South Korea, China, Argentina and Russia, according to the website of the King Abdullah City for Atomic and Renewable Energy, or K.A. CARE, which was established by the Saudi government in 2010 to support the development of nuclear and renewable energy in Saudi Arabia. French energy companies Areva SA and EDF SA have agreed to help train workers and help develop a Saudi supply chain. The French and Saudi governments in June 2015 signed an agreement to study the feasibility of building two power reactors. South Korea back in March 2015 signed a memorandum of understanding to study the feasibility of building two small to midsize reactors.

Cities in the Desert: Some observers see a compelling need for nuclear power in Saudi Arabia, whose population is increasingly moving to modern cities in the desert, where air conditioning and desalination are in great demand. Nuclear energy also could help free up more oil for export and eliminate the need to import natural gas. The nation generated 45% of its electricity from natural gas and 55% from oil as of 2012, according to the IEA. The recent collapse of oil prices could be a concern for the government's ability to sustain its nuclear-building program. In August 2015, the country began issuing about \$5 billion of bonds to make up for its budget shortfall as a result of the decline in oil exports' value.

"If oil prices are low, then financing the construction of 16 nuclear reactors at the same time, with potential cost overruns, might be an issue, even for a rich country like Saudi Arabia," says Princeton's Mr. Ahmad. But, like many of its neighbours, having an autocratic government will help in terms of the centralized decision-making and the security infrastructures required for such energy systems. One of the first issues facing not just the Saudi government but all of the region's

powers considering a nuclear-energy program is the general lack of native nuclear engineers, plant operators and waste-disposal experts. Each country faces a choice of either importing that talent or rapidly developing the skills domestically.

"It is like the question of the chicken and the egg," says Anne Starz, an expert on nuclear energy development at the IAEA. The UAE, with a long tradition of relying on foreign workers, is importing the necessary talent. A South Korean-led workforce is designing and building the plant at Barakah.

Developing Local Talent: Saudi Arabia is taking a much slower approach. The kingdom aims to train a largely local workforce to run its plants, says

Noura Youssef Mansouri, a Saudi energy expert and strategy and marketing manager with Areva in Riyadh. King Abdulaziz University in Jeddah has launched a program to teach nuclear engineering. Meanwhile, the country also is sending scientists to train in France and other countries

One of the biggest uranium mines in Wyoming, the nation's top producer of the radioactive metal, proposes to more than double in size on the hope that weak prices since the 2011 Fukushima nuclear disaster will begin to climb back upward.

with long experience in nuclear energy. Just as serious as the shortage of engineers, meanwhile, is the scarcity of water needed for cooling the nuclear reactors. A typical nuclear power plant requires 800,000 cubic meters of water per megawatt of power produced. Site selections for the 16 reactors haven't been completed yet.

Source: <http://www.wsj.com/articles/saudis-make-push-for-nuclear-energy-1442350064>, 15 September 2015.

URANIUM PRODUCTION

GENERAL

Ur-Energy Proposes to Expand Wyoming Uranium Mine

One of the biggest uranium mines in Wyoming, the nation's top producer of the radioactive metal, proposes to more than double in size on the hope that weak prices since the 2011 Fukushima nuclear disaster will begin to climb back upward. Littleton, Colo.-based Ur-Energy Inc. plans to expand its Lost Creek in-situ mine in south-central

Wyoming to an area covering some 15 square miles. Under the plan, production from the site would increase from around 800,000 pounds a year to as much 1.2 million pounds. Total permitted production would increase from 1 million to 2.2 million pounds, which includes as much as 1 million tons brought to Lost Creek from elsewhere for processing into yellowcake, a uranium concentrate powder.

The proposed expansion must be approved by the US Bureau of Land Management, which is taking public comment on the move. Nearly 60% of the 4.9 million pounds of uranium produced in the US in 2014 came from Wyoming, home to four of the nation's eight operational in situ uranium mines. In situ mining involves drilling hundreds of injection and recovery wells across a wide area, instead of digging tunnels, as in a conventional mine. Chemicals such as hydrogen peroxide or sodium bicarbonate are pumped underground to dissolve uranium from surrounding deposits. Uranium-bearing solution is then pumped to the surface. Spot prices for uranium were \$37.25 a pound on 15 September, according to Ux Consulting, a nuclear information provider. That is about half of where they were in early 2011. Prices could recover as Japan restarts more of its 40 or so nuclear reactors, said Steve Hatten, Ur-Energy's vice president of operations.

"While the demand is still there, it's a very conservative market. We're waiting to see not only what the Europeans are doing but also the Asian markets are doing," Mr. Hatten said. "The rate of the restart, we believe, will have an effect on the pricing," he said. Japan had shut down all of its nuclear reactors by September 2013 as the government developed stricter safety requirements after an earthquake and tsunami damaged the Fukushima Daiichi power plant and caused meltdowns at three reactors. The disaster also prompted Germany to phase out its reactors and other nations to rethink their commitment to

nuclear energy.

Japan restarted its first reactor under the new regulations at the Sendai power plant in August 2015. The BLM will take public comments on the expansion until Oct. 29. If planning and permitting go smoothly, Mr. Hatten expects the expanded portion of the mine to go into operation in a year or two. The new wells at Lost Creek, where production began in 2013, will target a formation about 500 feet down, or about 100 feet deeper than the existing wells, according to Mr. Hatten. The mine 40 miles northwest of Rawlins covers a remote area of sagebrush and rock outcrops in the Great Divide Basin. About 50 people

work there.

Source: <http://www.wsj.com/>, 15 September 2015.

NUCLEAR NON-PROLIFERATION

IRAN

Iran Rushes to Meet Terms of Nuclear Deal to Lift Sanctions

Iran is stepping up efforts to implement a landmark nuclear deal by January so as to benefit from sanctions relief, with European companies lining up for what one investor described as the most attractive opportunity in frontier markets globally. President Hassan Rouhani said at a meeting with journalists and media executives that "conditions were ripe" for his administration to start implementing the agreement, struck in Vienna in July, by the end of the year. His comments were echoed by business leaders and world investors participating in the first international conference studying investment and trade opportunities in Iran since the nuclear accord. The second Europe-Iran forum took place over the course of two days in Geneva.

European corporations have already begun pursuing lucrative contracts in Iran. Philippe Delleur, the president of Alstom – the French electricity generation and rail transport firm – was

in the French delegation visiting Tehran earlier this week. He was participating in the Geneva forum to meet other investors. ... *The Guardian* understands that the French industrial group Bouygues and Aéroports de Paris are in talks with Iran to construct the country's largest transport project, the second terminal at Tehran's Imam Khomeini international airport. Bouygues, which recently opened an office in Tehran, also has its eyes on Iran's need for 7,000 more hospital beds, or more than 15 institutions.

On 18 October, dubbed adoption day, Iran will begin taking steps to meet its obligations under the nuclear accord and the US will issue some waivers for specific sanctions. But the defining moment is what has become known as implementation day, when the IAEA verifies that Tehran has taken the necessary steps. Implementation day is when EU sanctions will be lifted and US sanctions suspended. Iranians hope that date will be as early as the beginning of 2016 but Americans are sceptical it will happen that soon. Sceptics believe it might take Iran up to six months to meet its obligations. Western firms will have the green light to conduct business in Iran from implementation day, according to Abdulasoul Dorri Esfahani, senior adviser to the governor of the Central Bank of Iran. "Iran is now there for you as a partner," Esfahani said.

Source: <http://www.theguardian.com>, 25 September 2015.

Gloomy Precursor to Nuclear Deal with Iran

In the past few days, North Korea has renewed its threat to produce nuclear weapons and to

On 18 October, dubbed adoption day, Iran will begin taking steps to meet its obligations under the nuclear accord and the US will issue some waivers for specific sanctions. But the defining moment is what has become known as implementation day, when the IAEA verifies that Tehran has taken the necessary steps. Implementation day is when EU sanctions will be lifted and US sanctions suspended.

demonstrate its long-range missile capability to targets that could include United States. So much for the previous attempt by an American president to duck a challenge to the NPT by offering incentives. We can only hope that President Obama succeeds with Iran where President Clinton failed with North Korea, but the precedent is not encouraging. The background for the latest flare-up of the oft-repeated North Korean nuclear threat is that the Hermit Kingdom is once again facing famine. Based on past performance, it may be using the threat of its nuclear weapons and missile programs to obtain better terms for the delivery of food or to block efforts to use food aid to extract military concessions.

In response, China has proposed reopening the six-nation talks that have previously led to North Korean promises to shelve its nuclear program – promises that have not been fulfilled. It has been two decades since President Clinton agreed to provide North Korea with safe nuclear power reactors in exchange for international control of its supply of weapons-grade plutonium. Mr. Clinton was following the lead of former President Jimmy Carter, who went to North Korea to negotiate the deal. But less than 10 years after it was struck, North Korea admitted to secretly converting uranium into nuclear weapons material in violation of its pledge to keep the Korean Peninsula a nuclear free zone....

It has also continued to work on its nuclear weapons program. The latest public estimate, from China, is that it has about 20 nuclear weapons and is actively making more. It is also trying to master the technology of making a

The latest public estimate, from China, is that it has about 20 nuclear weapons and is actively making more. It is also trying to master the technology of making a nuclear weapon small enough to be fired over the Pacific on one of two long-range missiles it has under development. However, North Korea is highly dependent on China, which has made it clear that it strongly opposes further development of Pyongyang's nuclear arsenal and its threats.

nuclear weapon small enough to be fired over the Pacific on one of two long-range missiles it has under development. However, North Korea is highly dependent on China, which has made it clear that it strongly opposes further development of Pyongyang's nuclear arsenal and its threats. This has, so far, limited North Korea's efforts to use its nuclear status for anything more than the extortion of economic benefits.

The newest flare up of extortionate threats casts a shadow over President Obama's effort to sell the alleged benefits of his agreement with Iran to restrict its nuclear ambitions. Secretary of State John Kerry sought to deflect concerns about the latest threats, under the presumption that North Korea does not yet have a capability to endanger other nations, despite plenty of evidence that it has enough nuclear weapons to wreak havoc on the Korea Peninsula. He said, "Our position is clear: We will not accept ... North Korea ... as a nuclear weapons state, just as we said that about Iran." Sorry, but North Korea already is a nuclear weapons state. And Iran, a much more dangerous antagonist, is headed in that direction unless it is stopped by something more effective than the agreement that Mr. Kerry negotiated.

Source: <http://www.postandcourier.com/>, 23 September 2015.

Republican Lawmaker Raises Iran Nuclear Deal Tax Question

A powerful US Republican lawmaker asked President Barack Obama to explain whether the Iran nuclear agreement would eliminate US tax penalties on companies that do business with Iran. In a letter dated 22 September and released by his office on 23 September, Representative Paul Ryan wrote to Obama criticizing the nuclear

agreement and asking whether it also would affect tax rules that discourage US firms from doing business with countries that support terrorism.

In a letter dated 22 September and released by his office on 23 September, Representative Paul Ryan wrote to Obama criticizing the nuclear agreement and asking whether it also would affect tax rules that discourage US firms from doing business with countries that support terrorism.

exchange for it curtailing the program, but it is not supposed to affect sanctions imposed for other reasons like support for terrorism or human rights violations. Congress failed to pass a resolution disapproving of the international

Tehran may outsource parts of its nuclear and missiles program to the secretive regime in North Korea, which on 15 September committed itself to producing more fuel for nuclear bombs. CIA Director John Brennan acknowledged that his agency is monitoring whether Iran may try to assist its clandestine nuclear program with help from another rogue state such as North Korea

"Your policy raises serious questions about whether you intend to keep in place tax rules that discourage conducting business with Iran," Ryan, chairman of the tax-writing House of Representatives Ways and Means Committee, wrote. The international pact lifts sanctions imposed over Iran's nuclear development in exchange for it curtailing the program, but it is not supposed to affect sanctions imposed for other reasons like support for terrorism or human rights violations. Congress failed to pass a resolution disapproving of the international nuclear agreement before a Sept. 17 deadline, preserving a potential legacy foreign policy achievement for Obama.

But lawmakers who oppose the deal, mostly Republicans, have made clear they have not given up their fight over what they see as a dangerous agreement reached by the Democratic administration. Some are writing legislation to renew existing sanctions and impose new ones within the

next few months, despite White House objections. Ryan was the Republican nominee for vice president in the 2012 campaign. He and presidential nominee, former Massachusetts Governor Mitt Romney, lost the election to Obama and Vice President Joe Biden.

Source: <http://www.reuters.com/>, 23 September 2015.

CIA Watching for Iranian Nuclear Collaboration with Rogue States Like N. Korea

The Iran nuclear deal is silent on an issue that the CIA and proliferation experts are concerned about: that Tehran may outsource parts of its nuclear and missiles program to the secretive

regime in North Korea, which on 15 September committed itself to producing more fuel for nuclear bombs. CIA Director John Brennan acknowledged that his agency is monitoring whether Iran may try to assist its clandestine nuclear program with help from another rogue state such as North Korea, or by colluding with Pyongyang toward the secret purchase and transfer of nuclear weapons for Tehran.

Source: <http://www.washingtontimes.com/>, 15 September 2015.

TURKMENISTAN

Turkmenistan Becomes IAEA Member

Central Asian neutral state Turkmenistan has become a member of the IAEA. The country was admitted to the organization after the 59th session of the General Conference of the IAEA in Vienna passed a relevant resolution by unanimous vote, the Turkmen Foreign Ministry reported. Member-states of this organization praised Turkmenistan's commitment to the principles of non-proliferation of nuclear weapons in the world, including in Central Asia. The session noted that Turkmenistan as a member of the IAEA will be fulfilling all its commitments and tasks and act in accordance with the purposes and principles of the UN Charter.

The IAEA is the world's leading forum for scientific and technical cooperation in the peaceful uses of nuclear technology created within the UN in 1957. It aims to promote cooperation in the peaceful uses of nuclear energy. Turkmenistan has worked with the IAEA since 2005, when the agreements on the application of guarantees in relation with the NPT and the Additional protocol to this agreement were signed in Vienna. Turkmenistan committed itself to provide international experts with the accounting of nuclear and ionizing materials as well as precision equipment, which uses nuclear and ionizing on an annual basis.

Such long-term cooperation has positively

affected mutual cooperation in between Turkmenistan and the IAEA. Experts believe that joining the IAEA has no controversial stance and it does not violate the Central Asian nation's internationally recognized neutrality principle as a membership in such an institution is profitable for this country to protect itself from possible future crises. "The IAEA is an international organization that does not represent any military bloc. So, Turkmenistan does not lose anything by joining it. It actually gains admission to a large international group dedicated to keeping the world safe from nuclear weapons and nuclear war," Bruce Pannier, the expert on Central Asia and Senior Correspondent at Radio Free Europe/Radio Liberty told *AzerNews* earlier.

Central Asian neutral state Turkmenistan has become a member of the IAEA. The country was admitted to the organization after the 59th session of the General Conference of the IAEA in Vienna passed a relevant resolution by unanimous vote, the Turkmen Foreign Ministry reported.

Holding the world's fourth largest natural gas reserves after Russia, Iran, and Qatar and being one of the key players in the energy market of the resource-rich Caspian region, Turkmenistan intends to diversify its energy export markets. In this context Ashgabat's willingness to cooperate with international organizations can be viewed

as a kind of policy protecting itself from all possible challenges.

Source: <http://www.azernews.az/region/87962.html>, 17 September 2015.

NUCLEAR COOPERATION

CHINA-UK

China, UK to Fund Nuclear Research Centre

China and the UK will work together to co-fund a £50 million (\$78 million) nuclear research centre, to be headquartered in the UK. Chinese vice premier Ma Kai and British chancellor George Osborne announced the plan on 21 September during the 7th UK-China Economic and Financial Dialogue summit in Beijing.

The Chancellor also announced a regional collaboration agreement between Cumbria and

Sichuan Province, deepening commercial ties between the province and the north west of England's expertise in nuclear decommissioning and waste management. These developments followed a landmark announcement by Osborne the same day that the UK government would provide up to £2 billion (\$3 billion) in support for the planned Hinkley Point C nuclear power plant, which China may participate in.

The UK's National Nuclear Laboratory (NNL) said on 22 September that it will jointly lead the new UK-China Joint Research and Innovation Centre (JRIC) with the China National Nuclear Corporation (CNNC). The JRIC – which will incorporate projects in a number of different areas of work across the whole nuclear fuel cycle – will “act as a portal to allow UK companies and academic organizations and their Chinese counterparts to work together on areas of mutual benefit and will support the development of Subject Matter Experts and others with higher level skill in both countries,” NNL said.

Over the coming months NNL and CNNC will work together to establish a program of work for the JRIC and to develop links with other UK bodies including the Nuclear Advanced Manufacturing Research Centre (NAMRC), the National Skills Academy for Nuclear (NSAN), the Nuclear Innovation and Research Advisory Board (NIRAB) and key UK universities working in the nuclear sector.

Professor Andrew Sherry, chief scientist at NNL, wrote in a blog on the Department of Energy and Climate Change's website that there is a strong case for exploring the potential of next generation nuclear technologies. “There is scope for developing new reactor concepts including small and modular reactors, which can provide both electricity and potentially heat, and also for considering even more advanced reactors which can be powered with reprocessed spent fuel to make more efficient use of the uranium fuel, and generate less nuclear waste,” he said. “These advances will need targeted research across the

UK, drawing together universities, national laboratories and industry and linking effectively with the international community.”

Source: World Nuclear News, 25 September 2015.

FRANCE–PAKISTAN

French Intellectual Backs Civil Nuclear Cooperation with Pakistan

Dr Pascal Boniface, eminent intellectual and Director of the premier French think-tank, IISA, has supported France's civil nuclear cooperation with Pakistan, on the pattern of the US-Indian civil nuclear agreement, saying that Pakistan as a country of 200 million people with nuclear weapons has a pivotal role to play in the most strategic part of the world. He made these remarks during a guest lecture on “France, Europe & Changing Global Scenario” at the Pakistan-

China Institute, which was chaired by Ambassador Masood Khan, Chairman Institute of Strategic Studies.

Senator Mushahid Hussain, Chairman of the Senate Defence Committee who was recently-elected as Chairman of the Parliamentary Committee of the CPEC, was also present on the occasion, while the lecture was attended by the Ambassador

of France Mrs Martine Dorance and Belgium Ambassador Verheyden, as well as heads of think-tanks, university professors and scholars of international relations, former Foreign Secretary Riaz Khokhar and former head of ISI, Lt Gen (R) Asad Durrani. Dr Boniface also criticised the Iraq war since it was ‘destabilising for the Arab world’, and he welcomed the Iran nuclear deal terming it as ‘a rare defeat for the powerful pro-Israeli lobby in the United States’.

Senator Mushahid Hussain, while exchanging his views, praised the French role in world affairs, whose architect was the great French statesman, the late president General Charles de Gaulle. He said that countries like France and China, together

Dr Pascal Boniface, eminent intellectual and Director of the premier French think-tank, IISA, has supported France's civil nuclear cooperation with Pakistan, on the pattern of the US-Indian civil nuclear agreement, saying that Pakistan as a country of 200 million people with nuclear weapons has a pivotal role to play in the most strategic part of the world.

with Pakistan, would be 'key players in the emerging multi-polar world'. Asad Durrani said that in today's world, 'there are two forces with a truly global outreach, the United States and Al Qaeda', with a capability to strike anywhere militarily anywhere in the world.

The participants acknowledged that France, the largest country in the EU, and with nuclear energy providing the bulk of its power needs, is leading the world in civil nuclear energy technology for peaceful purposes. Nathalie Dupont, Counsellor Political Affairs, Press and Communication, also shared her views with the participants regarding the need for strengthening bilateral relations, especially at the academic and diplomatic level. The lecture was followed by an interesting and animated discussion among the distinguished audience.

Source: <http://www.thenews.com.pk/>, 21 September 2015.

RUSSIA-IAEA

Rosatom and IAEA Enhance Radiation Safety Cooperation

The agreement was signed during the IAEA's Scientific Forum, being held in Vienna in the third week of September, by IAEA deputy director general for nuclear safety Denis Flory and Rosatom deputy director general for innovation management Vyacheslav Pershukov. They were joined by IAEA director general Yukiya Amano and Rosatom director general Sergey Kirienko. The so-called practical arrangements constitute a bilateral agreement to extend cooperation in radiation safety to include all projects conducted by the two parties. The IAEA put forward the initiative to sign the arrangements with all Russian organizations currently collaborating with the agency in radiation safety. Rosatom said it is the first Russian company to sign them.

The arrangements cover "nuclear personnel

radiation risk assessment and management activities during planned exposure to radiation in a professional environment", Rosatom said. This project will run for three years under Rosatom's supervision and with the participation of experts from the Russian Ministry of Health. Rosatom will fund the project and the IAEA is to provide international expertise, Rosatom said. "The project aims to develop a methodology for assessing individual radiation risks for staff at nuclear facilities in Russia based on individual dose calculation and analysis," Rosatom said. "It will culminate in a guidance report that will ultimately be published as a technical document to facilitate best international experience to be circulated among IAEA Member States," it added.

Pershukov said in the corporation's statement that in signing the practical arrangements, Russia had "once again validated its status as a global leader in nuclear power". "Russia will become the first country to implement a risk-assessment approach to monitoring and controlling personnel exposure to radiation," he said. "Rosatom is ready to share its experience with countries cooperating with Russia to establish national nuclear power programs."

Source: <http://www.world-nuclear-news.org/>, 15 September 2015.

NUCLEAR TERRORISM

USA

Gamma Shield Thunder Nuclear Terrorism Exercise Concludes

An exercise program called Silent Thunder, which directly addresses the dangers of nuclear terrorism, which was developed and conducted in partnership by the NNSA and FBI, this 17 September concluded the Gamma Shield Thunder counterterrorism drill. The Gamma Shield Thunder table-top exercise was conducted at LDS Hospital

– a general urban hospital and surgical center in Salt Lake City, Utah – as part of NNSA’s Silent Thunder table-top series which is designed to provide federal, state and local officials, first responders and law enforcement critical, hands-on experience in responding to a terrorist attack involving radiological materials.

The NNSA began the WMD Counterterrorism Exercise Program in 1999, and it’s grown to include both domestic DoE facilities and private sector locations such as hospitals and universities. The exercises have been carried out primarily within the United States, but have included foreign participants as well. To date, NNSA and FBI have conducted Silent Thunder exercises in 22 states and the District of Columbia, with plans to reach additional states in the future.

The exercise series recognizes that reducing the risk of radiological or nuclear terrorism requires a whole-of-community approach that brings together officials and responders from the federal, state, local and facility levels.... This Gamma Shield Thunder exercise played out a fictitious scenario in which terrorists attempted to seize control of high-activity radiological sources by infiltrating hospital facilities. The participating officials worked cooperatively to assess and respond to simulated facility alarms and then manage the crisis as if it were actually happening. The goal of these exercises is to provide first-hand crisis management experience, facilitate coordination between multiple agencies and improve both security and emergency response methods. Exercises take place in select locations across the country with facilities that house nuclear or high-activity radioactive materials.

“From Intermountain Healthcare Central Region’s perspective, this exercise allowed us to achieve a number of goals,” said Central Region Director of Safety and Security Glen Buma. “We were able to evaluate the region’s procedures and tactical

decision making, exercise our mutual aid and Unified Command structure, improve communication and interoperability between local law enforcement and surrounding jurisdictions and evaluate our resiliency planning and continuity of operations. Overall, this was an excellent experience that provided enormous benefit to our region’s hospital preparedness.” The exercise series is jointly organized and funded by NNSA’s GMS, NNSA’s Office of Counterterrorism Policy and Cooperation and the FBI.

The federal agencies participating in Gamma Shield Thunder were joined by authorities representing federal, state, county and municipal agencies including: the US Nuclear Regulatory Commission Region IV; Department of Homeland Security; Radiation Emergency Assistance Center/ Training Site (REAC/TS); Sandia National Laboratories; the 85th WMD Civil Support Team; and the Utah Agencies, the State Intelligence Fusion Center; Department of Public Safety, Department of Environmental Quality, Department of Health; Salt Lake City and County Health Departments; Salt Lake City Emergency Management; Murray City and Salt Lake City Fire Departments, Murray City and Salt Lake City Police Departments and Intermountain Healthcare, Inc. representatives.

The NNSA began the WMD Counterterrorism Exercise Program in 1999, and it’s grown to include both domestic DoE facilities and private sector locations such as hospitals and universities. The exercises have been carried out primarily within the United States, but have included foreign participants as well.

NNSA’s GMS, in coordination with the NRC and the Department of Homeland Security, installs voluntary security upgrades at hospitals and other civilian sites housing high-activity radiological sources that are commonly used in medical procedures and other commercial activities. Preceding the Gamma Shield Thunder exercise, central region instituted these GMS radiological security improvements. These security upgrades further reduce the potential for theft or misuse of radiological materials that could be used in a dirty bomb. These voluntary upgrades are in addition to increased security enhancements required by NRC and NRC agreement states since 2006.

Started in 1999, NNSA's Office of Counterterrorism Policy and Cooperation's WMD Counterterrorism Exercise Program took on an expanded role following the tragic events of Sep 11, 2001. Since the program began, over 8,700 international, federal, state and local officials have participated in 100 different exercises. To promote full participation by state and local officials, Silent Thunder exercises are unclassified and utilize open source information for scenario development and are conducted in a no-fault environment.

Source: <http://www.hstoday.us/>, 17 September 2015.

NUCLEAR DISARMAMENT

AUSTRALIA

Australia Defends Opposition to Global Push for Nuclear Weapons Ban

Australia has defended its position on nuclear disarmament, saying a push for a global treaty banning nuclear weapons "will not lead to their elimination". Guardian Australia reported on 16 September on a cache of diplomatic cables released under a freedom of information request, showing Australia resisting a growing momentum behind an Austrian-led "humanitarian pledge" to "stigmatise, prohibit and eliminate nuclear weapons. The pledge, now endorsed by 116 countries, is seen as a precursor to a new global treaty outlawing all nuclear weapons.

But a spokeswoman for the DFAT told Guardian Australia it "sees no value" in the Austrian pledge because it ignores the realpolitik of the global

A spokeswoman for the DFAT told Guardian Australia it "sees no value" in the Austrian pledge because it ignores the realpolitik of the global nuclear landscape. None of the five "declared" nuclear nations under the NPT – the US, Britain, France, China and Russia – have endorsed the Austrian pledge. Nor have any of the countries which have nuclear weapons outside the NPT: India, Pakistan, Israel and North Korea.

nuclear landscape. None of the five "declared" nuclear nations under the NPT – the US, Britain, France, China and Russia – have endorsed the Austrian pledge. Nor have any of the countries which have nuclear weapons outside the NPT: India, Pakistan, Israel and North Korea.

"The Austrian pledge ignores the reality that to eliminate nuclear weapons the

international community must address the security as well as the humanitarian dimensions of nuclear weapons," the DFAT spokeswoman said. Disarmament efforts must involve the world's nuclear weapons states, she said. "Only through taking ... practical steps to enable nuclear-armed states to disarm, can we eliminate nuclear weapons".

Australia is also reticent to support a global ban on nuclear weapons because it is reliant on the nuclear weapons of the US for "extended nuclear deterrence". "Our alliance with the United States is the bedrock of our national security arrangements, and this includes a reliance on extended nuclear deterrence provided by US forces," DFAT said. "As long as the threat of nuclear attack exists, no matter how small the likelihood, Australia will continue to rely on this assurance."

Australia is also reticent to support a global ban on nuclear weapons because it is reliant on the nuclear weapons of the US for "extended nuclear deterrence". "Our alliance with the United States is the bedrock of our national security arrangements, and this includes a reliance on extended nuclear deterrence provided by US forces.

The current global mechanism for nuclear disarmament is the 1968 NPT. But the disarmament "pillar" of the treaty is widely regarded as having failed.

While the superpowers are slowly reducing their stockpiles, they are, at the same time, working to develop new weapons

systems or upgrade existing ones. And non-NPT India, Pakistan, and North Korea have increased their nuclear stockpiles in recent years. Australia

says it is committed to disarmament under the NPT, and other measures such as the comprehensive test ban treaty, and negotiations over a fissile material cut-off treaty. "But clearly the strongest assurance against nuclear attack is the total elimination of nuclear weapons," DFAT told Guardian Australia, "and for this reason the Australian government works hard to further international efforts to achieve nuclear disarmament."

In cables back to Canberra, Australian diplomats have highlighted the weaknesses in the non-proliferation treaty process. In a briefing prepared for the foreign affairs minister, Julie Bishop, officials concede "prospects are bleak for meaningful progress in multilateral arms control". The FOI request that revealed the government correspondence was made by the International Campaign to Abolish Nuclear Weapons, a coalition of NGOs from more than 95 countries, whose aim is a global ban on nuclear weapons.

Its Asia-Pacific director, Tim Wright, told Guardian Australia the humanitarian pledge had developed an international momentum, and he was confident it would lead to new global negotiations towards outlawing nuclear weapons. The Australian government's argument that it required the protection of a foreign power's nuclear weapons was "a long-held belief that has gone unchallenged". "Nuclear weapons undermine safety, they do not enhance it," Wright said.

A global ban treaty on nuclear weapons would help create a new international norm that the weapons should not be used in any situation. Professor Ramesh Thakur, director of the Centre for Nuclear Non-proliferation and Disarmament at the ANU, said Australian diplomats had underestimated support for the humanitarian pledge. "What is really clear from these cables, but not explicitly stated, is that Australian officials have been very surprised, they have been taken aback, by the strength of support for the humanitarian consequences pledge, and they are scrambling to explain that. "Support for the humanitarian consequences pledge is making Australia's position more difficult; it is galvanising public and political opinion, and Australia finds itself running against the domestic and international tide."

Source: <http://www.theguardian.com>, 17 September 2015.

GENERAL

Updates on the International Partnership for Nuclear Disarmament Verification

"For President Obama, freeing the world from the shadow cast by nuclear weapons is not just an aspirational goal, but a deeply personal one.... Everyone who shares this sentiment – shares the goal of a world without nuclear weapons – should devote time and energy to the verification challenges that face us. An upfront investment in the tools and technologies to verify nuclear reductions at lower numbers is the means to the end we all seek. The International Partnership for Nuclear Disarmament Verification can help us get there."

On December 4, 2014, Under Secretary of State for Arms Control and International Security Rose Gottemoeller announced a new initiative to develop the tools and technologies in the quest to reduce and eliminate nuclear weapons – the IPNDV. The IPNDV channels expertise from both nuclear and non-nuclear weapon states to address the complex challenges involved in the verification of nuclear disarmament. Following the inaugural meeting in March 2015 in Washington, DC, the 26 countries of the Partnership agreed to form three working groups to inform closer study on verification issues that exist at all stages of the nuclear weapons lifecycle. The IPNDV's three working groups will build capacity among Partner States and explore solutions to fundamental nuclear monitoring and verification challenges.

- **Working Group One:** "Monitoring and Verification Objectives," will be chaired by Italy and the Netherlands.
- **Working Group Two:** "On-Site Inspections," will be chaired by Australia and Poland.
- **Working Group Three:** "Technical Challenges and Solutions," will be chaired by Sweden and the United States.

The United States is proud to partner with the NTI, whose experts boast decades of experience in nuclear security and nuclear verification. To inform and guide the working groups, NTI unveiled this third week of September a new publicly available web based "Monitoring and Verification

Resource Collection”—a virtual archive of the work that materials.

The Partnership will meet on 2014 November 16-18 in Oslo, Norway to finalize the terms of reference, paving the way to the official launch of the working groups. In advance of the Oslo plenary, on October 14th, the United States and NTI will co-host a public side event at the United Nations in New York, “Building a Path Forward: Update on the International Partnership for Nuclear Disarmament Verification.”

Source: <http://www.state.gov/t/avc/rls/247127.htm>, 21 September 2015.

UK

Welcome for Nuclear Disarmament Debate

A Senior Government Minister from a country used as a nuclear weapon testing ground after World War II has welcomed a debate to be held later this 23 September in the Scottish Parliament on nuclear disarmament. The Members Debate, led by Bill Kidd MSP, highlights legal action taken by the Marshall Islands against the UK Government calling for it to meet its obligations under international law to negotiate an end to the nuclear arms race and facilitate nuclear disarmament. The Marshall Islands MoFA, the Honourable Tony A. de Brum, has written to Mr Kidd thanking members of the Scottish Parliament for holding the debate which he has said “could not be more timely or important” as the case against the UK Government is moving forward at the International Court of Justice.

The Marshall Islands were used as a nuclear weapon testing ground in the in the 1940s and 1950s – leading to significant health problems for its population. The Marshall Islands government has now taken legal action against all nine nuclear-armed countries, in international and national courts, highlighting the alleged breach of Article VI of the NPT and customary international law.

Commenting ahead of the debate, Bill Kidd MSP

said: “The people of the Marshall Islands understand all too well the horrendous impact of these abhorrent weapons. I am pleased that the Scottish Parliament will be able to debate the awful effect of nuclear weapons testing on the Marshall Islands and the courageous action they have taken to bring about global nuclear disarmament. “I thank Mr de Brum for his kind words. I hope this evening the Scottish Parliament will demonstrate Scotland’s solidarity with people across the globe that are working to secure a world without nuclear weapons.

“The UK is a signatory to the NPT and one of only five signatories that possess nuclear weapons – the UK Government has a clear legal and moral obligation to work towards a nuclear free world. “Rather than meet their obligations the UK Government plan to spend £100 billion on new nuclear weapons. They must honour their commitments, remove the Trident nuclear weapons system and cancel plans to replace it. “The pressure is now on Labour – both at

Westminster and Holyrood – to clarify their position and work with the SNP in opposing spending £100 billion on Trident’s replacement; Jeremy Corbyn has so far failed to give an early commitment that Labour MPs will join the SNP in voting against the renewal of Trident and Kezia Dugdale seems as confused on this issue as she is on her party’s position on independence.”

Source: <http://www.snp.org/>, 23 September 2015.

NUCLEAR SAFETY

RUSSIA

Rosatom Plans Next Phase of Nuclear and Radiation Safety

Rosatom will soon present the Russian government with its report for the FTP for nuclear and radiation safety for 2016-2025, director general Sergey Kirienko told PM Dmitry Medvedev during a meeting on 18 September at Government House. The corporation has completed 108% of

The Marshall Islands were used as a nuclear weapon testing ground in the in the 1940s and 1950s – leading to significant health problems for its population. The Marshall Islands government has now taken legal action against all nine nuclear-armed countries, in international and national courts, highlighting the alleged breach of Article VI of the NPT and customary international law.

the FTP for 2008-2015, and despite a cut in state funding of RUB8.4 billion, Kirienko said.

Rosatom published a transcript of their meeting. Medvedev asked Kirienko the size of Rosatom's

order book. This is a "particularly important" matter now, he said, with the Russian economy "in a state of turbulence". Kirienko said that the state nuclear corporation had increased the number of its orders in the last few years by five-and-a-half times – to a total of 30

nuclear power units in 12 countries. "I'm afraid to jinx it, but we are in simultaneous talks in five countries for more than another 10 units," he said. The value of its orders now totals \$300 billion and it continues to grow, he said. Work to construct each new nuclear power unit is worth \$5 billion.

Rosatom's talks with partners and potential partners during the IAEA's General Conference in Vienna showed that interest in Russian nuclear technology "isn't simply being preserved, it's increasing," he said. "It may sound immodest, but the truth is that Rosatom is today's number one. In recent years, we haven't lost a single tender. Everywhere there has been an open tender, we've won it." The importance of its contracts extends beyond the seven to 10 years required to build new reactors for a customer, he said, since Rosatom guarantees its services for the 60 years a unit will be in operation. In practice, that period will be as long as 100 years, he added.

Other work includes the supply of nuclear fuel and, eventually, the decommissioning of a unit and managing its used fuel. Medvedev asked whether the government should adopt

new policy decisions to help support Rosatom with its work. Kirienko said: "No special solutions are

required at the moment. We have an ongoing program of nuclear energy development. We have implemented it and we are opening up opportunities for the industry. Our starting point

was being able to produce one set of equipment a year, now we can produce up to seven using our national capacity. But what is important, is that we maintain competition in domestic markets, or in some cases create it, because this allows us to keep prices down."

The importance of its contracts extends beyond the seven to 10 years required to build new reactors for a customer, he said, since Rosatom guarantees its services for the 60 years a unit will be in operation. In practice, that period will be as long as 100 years.

A decision the corporation needs the government to focus on in the near future is to extend the FTP on nuclear and radiation safety, Kirienko said. "The Russian nuclear industry will be celebrating its 70th anniversary and in that time it has accumulated quite a lot of baggage," he said, mainly from the country's military legacy. Kirienko stressed the importance of the introduction of a dry storage facility for used nuclear fuel at the Mining and Chemical Combine in Krasnoyarsk. He told Medvedev that, to date, almost 30,000 used fuel assemblies have been moved from Russia's nuclear power plants, "dramatically increasing the safety and reliability of their storage". He added: "We have rehabilitated 2.7 million square meters of contaminated areas, which is one million more than had been planned by the FTP."

Rosatom has "completely freed" the Russian Far East of its used nuclear fuel. Apart from the Bilibino plant, in the Chukotka region, "there are no nuclear power plants there, where we have undertaken on behalf of the government the task of removing and reprocessing the used fuel of nuclear submarines as and when they are transferred from the MoD.

Rosatom has "completely freed" the Russian Far East of its used nuclear fuel. Apart from the Bilibino plant, in the Chukotka region, "there are no nuclear power plants there, where we have undertaken on behalf of the government the task of removing and reprocessing the used fuel of nuclear submarines as and when they are transferred

from the MoD," he said. The task of reprocessing fuel from the 201 vessels transferred to its

responsibility to date is 97% complete, he added. In addition it has, in collaboration with the MoD, the Ministry of Transport, among others, recovered the 992 radioisotope generators from the Northern Sea Route. Twelve such generators are now in operation in that region.

Kirienko outlined the cost reductions Rosatom has achieved with its management of used nuclear fuel. It has reduced the cost of removing used fuel from nuclear power plants by three times, for example. He added, it will for the first time test Russian-produced MOX fuel. He said that an agreement between Russia and the USA on the disposal of excess plutonium "is not needed".

"Russia and the USA have each launched the construction of MOX plants. The Americans have already spent \$7.7 billion and eight years on building theirs, but at the start of the US Congress announced that, with no end in sight, they are halting construction. We also have a MOX facility, which we built in two-and-a-half years for RUB9 billion. The plant is in operation." Kirienko was referring to the US Energy of Department project at the Savannah River site in South Carolina that was designed to take plutonium no longer needed for nuclear weapons and turn it into fuel for commercial nuclear reactors.

The director general of MCC told *World Nuclear News* on 10 September that the enterprise's MOX fuel fabrication facility will increase its annual production of fuel assemblies from 20 this 2015 to 400 in 2017. These will be the first nuclear

fuel assemblies for the BN-800 fast neutron reactor - unit 4 at the Beloyarsk nuclear power plant in the Sverdlovsk district. A centralized 'dry' interim storage facility for used nuclear fuel from Russia's RBMK-1000 reactors has been in operation at the MCC site since February 2012.

This initial stage of the facility will be used for storing 8129 tonnes of RBMK fuel from the three power plants in the country using that kind of reactor: Leningrad, Kursk and Smolensk. The used fuel from these plants is currently stored in on-site water-filled pools, but these are reaching full-capacity. Later, used VVER-1000 fuel from reactors

at the Balakovo, Kalinin, Novovoronezh and Rostov plants will also be stored at the facility. Such fuel has already been sent to Zheleznogorsk for storage in water pools. The facility - measuring some 270 metres in length, 35 metres wide and 40 metres high - will ultimately hold 38,000 tonnes of used RBMK and VVER fuel. Full-scale commissioning of the dry storage complex at MCC is scheduled for 2015, leading to the storage of VVER-1000 used fuel, Gavrillov said, adding that in the future, the complex could welcome foreign customers.

Source: <http://www.world-nuclear-news.org/>, 21 September 2015.

USA

US Weapons Facility Accidentally Shipped Excess Nuclear Material

It's the kind of stuff you'd want to keep strict tabs on. Yet in July 2015, the Y-12 National Security Complex in Oak Ridge, Tennessee, dispatched more uranium to a private company in the US than it meant to, it now admits. This was caused by human error, says Steven Wyatt of the National Nuclear Security Administration, which manages the Y-12 site. "Personnel mistakenly placed more material into containers than intended," he says. Contractors at the unnamed firm reported the overgenerous delivery, prompting Y-12 - a nuclear weapons facility - to take action. "All material shipped...was recovered by a Y-12 team and returned to the Oak Ridge site safely," says

Shipping extra uranium comes with several concerns. Since the material can be further enriched to make a nuclear bomb or can serve as the explosive fuse that ignites one, and since its radioactivity can harm the environment and human health, Y-12 tries to track it carefully.

Wyatt. "These things shouldn't happen," says Robert Alvarez of the Institute for Policy Studies, a think tank in Washington DC. Alvarez has previously criticised security and safety at Y-12, which has struggled since the cold war's end to safely manage its vast stores of uranium, he says.

Shipping extra uranium comes with several concerns. Since the material can be further enriched to make a nuclear bomb or can serve as the explosive fuse that ignites one, and since its radioactivity can harm the environment and human health, Y-12 tries to track it carefully. In

2013, Y-12 made public that it logs every minute change to its uranium store in an attempt to catch mistakes like this, including changes in storage location and amounting to more than 7000 records per day. Besides the error in bookkeeping, transporting uranium in larger-than-expected quantities brings special safety considerations into play, Alvarez says. Increasing the amount of uranium brings it closer to the point at which it can go "critical" in a self-sustaining release of energy. And a worker unprepared to unload a larger shipment might end up handling it unsafely.

Those potential compounding issues didn't apply here, according to Wyatt. "At no time was there risk to employees, the public, or the environment," he says. He adds that internal investigations have already concluded, and changes are being implemented, though he did not want to discuss them in detail. That the error was caught by the receiving company and not picked up by Y-12's monitoring system is still alarming, Alvarez thinks. "They engage in faith-based management," he says. "They basically rely on whatever the contractor tells them."

Source: <https://www.newscientist.com/>, 23 September 2015.

NUCLEAR WASTE MANAGEMENT

SOUTH AFRICA

Japanese Expert Cautions SA on Nuclear Waste

A Japanese nuclear energy expert on 22 September cautioned South African decision makers to think carefully about nuclear waste before committing to its nuclear build programme. "You have to make sure what will be done with spent fuel nuclear waste before you commit to nuclear power, and that is a headache for all countries that have a nuclear power station," former vice chair of the JAEC, Tatsujiro Suzuki, told Fin24. Suzuki was speaking at a commemoration of the 70th anniversary of the atomic bombing of Japan in 1945 at the University of the Western Cape. Japan was still battling to manage the aftermath of the world's worst atomic disaster since Chernobyl at the Fukushima Daiichi nuclear plant north of Tokyo.

The Fukushima power station, operated by Tepco, was hit by an earthquake and tsunami in March 2011. Public acceptance of nuclear waste was a serious issue, said Suzuki. "Even if you solve the nuclear safety issue and the economics, waste management needs to be addressed," he said.

Source: <http://allafrica.com/stories/201509231301.html>, 23 September 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.