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**OPINION- Manpreet Sethi**

**Hanoi Done: Now What for Trump and Kim?**

The second Summit between the heads of government of the US and the DPRK ended earlier than expected on 28 February 2019. With both countries maintaining intransigent positions on how to handle the issue of DPRK's nuclear and missile programmes, President Trump opted to call a halt to the meeting. However, he did hold out hope for future interactions. So, while he seems to have walked away from the meeting in Hanoi, he has indicated that he has not given up on the prospect of future negotiations and still continues to call Kim Jong-un, whom he likes, "quite a guy."

With the end of the Summit, which President Trump called a "productive time" since the two got to know each other better, there has been speculation on what Chairman Kim might now do. Reports have emerged on some activity being seen on North Korean missile test sites. This has led to conjecture on whether the leader might be getting ready to conduct another test to signal his frustration with the negotiations, in which the US refused to lift sanctions in exchange for Kim's offering of closing some nuclear-related facilities.

**So, while he seems to have walked away from the meeting in Hanoi, he has indicated that he has not given up on the prospect of future negotiations. North Korea is believed to have offered to shut down Yongbyon, which is a nuclear complex consisting of reactors, fuel reprocessing plants, and uranium enrichment facilities. According to DPRK foreign ministry officials, this was a historically unprecedented offer.**

**CONTENTS**

- ☞ **OPINION**
- ☞ **STATEMENT**
- ☞ **NUCLEAR STRATEGY**
- ☞ **BALLISTIC MISSILE DEFENCE**
- ☞ **NUCLEAR ENERGY**
- ☞ **NUCLEAR COOPERATION**
- ☞ **NUCLEAR PROLIFERATION**
- ☞ **NUCLEAR DISARMAMENT**
- ☞ **NUCLEAR SECURITY**
- ☞ **NUCLEAR SAFETY**
- ☞ **NUCLEAR WASTE MANAGEMENT**

North Korea is believed to have offered to shut down Yongbyon, which is a nuclear complex consisting of reactors, fuel reprocessing plants, and uranium enrichment facilities. According to DPRK foreign ministry officials, this was a "historically unprecedented offer." However, the US has confirmed that the definition of facilities to be covered under the Yongbyon complex remained ambiguous in exchange for a demand to lift all sanctions. Besides, the US contends that there

may be other nuclear facilities beyond Yongbyon, and that in any case, this deal did not include existing nuclear weapons, fissile material

stockpiles and North Korean missile capabilities. Therefore, lifting all sanctions was not on the table unless in return for complete denuclearisation.

With the Hanoi meeting having ended as it has, is there a likelihood that North Korea might resume testing of nuclear weapons and/or ballistic missiles? While no predictions about Chairman Kim's behaviour are easy to make, some guesstimates are possible, and if the leader were willing to listen, this should make sense to him.

There are three main reasons for North Korea to have nuclear weapons: security, status, and as a bargaining chip. As is evident, some level of security premised on nuclear deterrence has been achieved through the six nuclear weapon tests and many more missile tests that North Korea has already conducted. Kim accelerated nuclear and missile tests in 2015-2016, and then claimed in November 2017 that North Korea had achieved "the great historic cause of completing the state nuclear force." Indeed, from the point of existential deterrence, more nuclear tests are not an urgent necessity.

As for status, DPRK achieved that when Trump decided to enter direct negotiations with Kim. The moment the two leaders shook hands in Singapore in June 2018, it was a moment of victory of sorts for the North Korean leader. His nuclear behaviour had achieved something none of his predecessors managed - a direct meeting with the US president. There is no doubt that this success was important to Kim for his domestic legitimacy, and he would be right in attributing his nuclear weapons and missile capability with the power to make this happen.

The third reason that the weapons are to be used for now is as a bargaining chip to leverage the

country's economic growth and development. In his new year address to the nation, Kim expressed the desire to focus on the economic dimension, and he well understands that the presence of nuclear weapons has provided him with an opportunity to use them for the country's economic mainstreaming. In view of this objective to be

extracted from the country's nuclear capability, it is more likely that DPRK should prefer to remain party to negotiations, particularly with Trump still holding on to the prospect of a deal, rather than carry out a test and ruin the chances of making any headway for economic growth.

By resuming testing, Pyongyang would earn only marginal deterrence benefits, but lose substantial potential economic and diplomatic advantages. For one, this would alienate South Korea, a country that has

shown special keenness under President Moon Jae-in to mend the relationship, and also at a time when the US and South Korea have decided to tone-down their annual large-scale military exercises. At the same time, any resumption of testing would also strain DPRK's relationship with China. Beijing is not keen to let the situation get out-of-hand in Pyongyang. It would rather have the threat toned down so that the US may reconsider deployment of the Terminal High Altitude Area Defence (THAAD) system in South Korea and Japan, which China perceives as a threat to its nuclear deterrence.

For all of these reasons, it makes no sense for North Korea to resume testing at this juncture. While no statements from Kim have been forthcoming on his sense of what transpired at Hanoi, he is likely to understand that he stands the best chance of a deal with Trump as president, who would be happy to showcase a victory as a success of his direct style of decision-making. The idea of a Nobel

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Evidently, both are still playing the game of who blinks first. As long as this remains confined to the negotiating table, things are fine. But if any of the mercurial leaders were to lose hope in the process, turbulence for international security can be safely predicted.

*Source: Institute of Peace and Conflict Studies, 27 March 2019.*

**OPINION- Ulrich Kühn**

**Five Ways to Counter INF Violations**

Time is running out on the Intermediate-range Nuclear Forces (INF) Treaty. In early August, the Trump administration will legally pull out of the accord with Russia banning ground-launched missiles with ranges between 500 and 5,500 kilometers. While it is not too late for a diplomatic solution and potential arms control measures to salvage INF's legacy (see my last column here), it becomes increasingly clear that neither the likely perpetrator, Russia, nor the accuser, the US, is willing to compromise. Meanwhile, the Pentagon is moving forward with a research and development program for its own future INF-range systems. At the same time, NATO allies have started to debate what reaction the alliance should take in response to the Russian violations. As Russia is expected to deploy more and more SSC-8 missiles, a punitive reaction by NATO members becomes increasingly likely. A number of options are possible.

**Option 1. Sanctions**

NATO allies could respond asymmetrically, targeting Russian economic and financial institutions instead of responding with military countermeasures. A new round of sanctions involving all allies could signal that NATO members will not let Russia off the hook. Particularly Europe's major economies, first and foremost the German, could tighten the screws on Russia, including by cancelling large economic cooperative

projects such as the disputed Nord Stream II pipeline. The downsides of this approach are obvious. Most importantly, Chancellor Merkel has made it very clear that Germany will continue to pursue its national interest with regards Nord Stream II. The pipeline so loathed by East Europeans will be built no matter what. Second, as the Minsk process has demonstrated, even orchestrated and sustained sanctions have not resulted in the Kremlin changing course. Third, some allies such as Italy or Greece are unlikely to agree to sanctions in order not to provoke Moscow. Thus, it seems unlikely that Europeans will support another round of even stricter sanctions against Russia.

**Option 2. Missile Defense**

Because economic sanctions seem unlikely and insufficient, military countermeasures come into play. As Germany's Minister of Defense, Ursula von der Leyen, confirmed, a number of options are being discussed in Brussels. One option would be strengthening missile defense throughout Europe. In order to deny Russia escalation dominance via its new missiles, point defense installations could help protecting NATO's critical reinforcement nodes. The downsides to this approach are considerable. First of all, systems like Patriot equipped with PAC-3 interceptors are not very reliable in defending against low-flying cruise missiles. They might be sufficient for protecting certain military installations but certainly cannot close off entire areas or even countries. In addition, more defense could be misperceived in Russia as an invitation for more offense, thereby increasing chances that Europe will experience another missiles arms race. Also, in times of Trumpian transactionalism, European allies should be well aware that costly missile defenses would, quite likely, have to be paid by Europeans themselves.

**Option 3. Bomber Deployments**

NATO allies could still strengthen their offensive capabilities well below the threshold of new US INF-range missiles. Here, one option that NATO has already exercised in the recent past would be

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the rotational deployment of US long-range bombers to Western Europe. Equipped with long-range conventional standoff weapons targeting Russian installations, these bombers could well signal allied resolve to the Kremlin. But some of the unintended signaling effects might turn out to be problematic in an acute crisis. Were Washington to send its bombers in such a crisis, Moscow might well misinterpret the move as preparations for a preventive strike, thereby forcing Moscow's hand to strike first.

#### **Option 4. Naval Presence**

Instead, NATO members could ask America to increase its naval presence in European waters with additional conventional firepower on board US submarines and Arleigh Burke class destroyers. The problem is that the latest revision of America's nuclear strategy envisions the development of a new class of low-yield nuclear warheads mounted on sea-launched ballistic missiles and a new generation of nuclear-tipped sea-launched cruise missiles (SLCM). But how on earth should the Russian military distinguish between an incoming conventional SLCM and its nuclear twin? Wouldn't the detection of any kind of SLCM employment risk immediate nuclear escalation by Russia? Responsible politicians and the military would need to answer these questions in a convincing manner.

#### **Option 5. Missiles for Missiles**

Finally, allies could opt for a tit-for-tat in ground-launched cruise and ballistic missiles. Latest news about America's post-INF posture report the development of a new conventional tipped GLCM, which might be ready for deployment in early 2021, and a Pershing III-like ballistic missile, only ready in a couple of years. Even though high-ranking NATO officials such as Jens Stoltenberg have downplayed this option, Europeans might soon be confronted with another deployment debate. No doubt, while perhaps be welcomed by governments such as the current one in Warsaw, a number of Western European allies might view

such a decision as highly problematic for domestic reasons. Even though, large-scale protests akin to the early 1980s are rather unlikely today, still, a renewed deployment debate could plunge a number of governments into despair, thereby rendering NATO ineffective. All in all, the political cost of a new deployment debate would most likely be very high.

Whatever the decision by NATO allies with regards measures to counter Russia's INF violations, it does not take much imaginative power to envision some sort of mix of the options discussed above. The bigger question is whether NATO allies will manage to stay unified when it comes to US pressure for deploying future INF-range systems

further down the road and whether they will be able to convince Washington of the salience of arms control.

Source: <http://valdaiclub.com/>, 27 March 2019.

#### **OPINION- Xie Zhihai**

#### **Rethinking Japan's Energy Security 8 Years after Fukushima**

It's been eight years since the Great East Japan Earthquake and Fukushima nuclear disaster. Since then, the utilization of nuclear energy, which accounted for more than one-tenth of Japan's energy mix before 2011, has become a controversial issue in Japan. Japan thus started to face the severe challenge of energy security.

First, due to the shutdown of most nuclear power plants, Japan's energy self-sufficiency rate plummeted from 20.2 percent in 2010 to 11.5 percent in 2011. Since then, the self-sufficiency rate has remained under 10 percent, which is extremely low compared to other countries. Japan has significantly increased its energy imports from overseas.

The reliance on foreign energy not only deteriorates the government budget deficit, but also brings increasing political risk. More than 80

percent of Japan's imported oil comes from the Middle East. It is not easy to assure a stable supply of oil from those politically unstable countries.

Second, Japan is highly dependent on fossil energy compared to other advanced countries. Fossil energy accounted for 94 percent of Japan's energy mix when the oil crisis happened in 1973. Since then Japan has made great efforts to reduce that share, which dropped to 81 percent in 2010. However, the degree of dependence on fossil energy rebounded to 89 percent in 2016, approaching the level at the time of oil shock. The increased use of fossil energy is meant to fill the gap caused by the suspension of nuclear energy. Japan now is extremely vulnerable to another oil shock as crude oil accounts for more than 40 percent of its energy source.

Third, the price of electricity in Japan has risen greatly due to the soaring energy cost.

Electricity rates peaked in 2014, when rates for household increased by about 24 percent and those for industries increased by about 38 percent over rates in 2010. Although the cost is on a downward trend, rates of electricity for both households and industries remain over 10 percent higher than 2010 rates. The rising price for industries means increasing cost for companies, negatively influencing their performance. The rising price for households starts to jeopardize affordability for ordinary people, damages people's consumption incentives, and eventually reduces people's quality of life.

Fourth, enlarging the development of renewable energy is another means to meet Japan's energy demand. But currently renewables are far from being able to substitute for nuclear and fossil energy to assure Japan's energy security. According to data from Japan's Agency for Natural Resources and Energy under the Ministry of

Economy, Trade and Industry, the proportion of renewable energy has slightly increased, from 4.3 percent in 2010 to 7.0 percent in 2016. Given the high costs of equipment such as solar panels, it will take a long time for Japan to achieve the universal use of renewable energy.

How should Japan tackle the challenges of energy security, then? It will take another round of strategic efforts for Japan to develop new alternative energy sources. To bring back its energy self-sufficiency rate to the 2010 level or even higher, renewable energy is the only possible solution as Japan has a very low primary energy reserve. Also it is not practical to reopen

most nuclear power plants while the decommissioning of Fukushima Daiichi doesn't appear to be going smoothly and many Fukushima people still haven't been able to return to a normal life

In July 2018, the government of Japan formulated the Strategic Energy Plan in order to show

the public the basic direction of Japan's energy policy. The Plan set the goal to raise Japan's energy self-sufficiency rate from around 8 percent in 2016 to 24 percent in 2030. This looks unrealistic, but it's not impossible if Japan can concentrate on the development and spread of renewable energy.

However, the Strategic Energy Plan stays ambiguous about Japan's future energy policy, despite its aim to shed light on that very subject. One big problem with the Plan is that the priority of the energy policy is not clear. The government aims to use renewable energy as the major power source by 2030, according to the Plan — but at the same time, the plan also attempts to restore nuclear energy and raise its share to 20 percent-30 percent. Former Prime Minister Koizumi Junichiro is well known for advocating the "zero nuclear energy" campaign after the 3.11 triple disaster. He continues to argue that Japan must

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be able to live without nuclear energy. In a recent talk show, he questioned the current Japanese government's energy policy and said it was a lie to claim that nuclear energy is safe, low-cost, and clean.

Some commentators criticize Japan for being poor at decisively changing track when necessary. When the time came for Japan to give up nuclear energy once and for all, the government was not ready to make a tough political decision. In the wake of the Fukushima nuclear accident, countries such as Germany declared they would abandon nuclear energy. However, it is ironic that Japan, the direct victim of the nuclear disaster, still doesn't dare to say goodbye to nuclear energy completely.

The Fukushima nuclear accident caused a crisis for Japan's energy security. But it is this very crisis that could provide an opportunity for Japan to redirect its energy policy and accelerate the development of renewable energy. Despite the government's hesitation, many Japanese already believe that nuclear energy is outdated and renewable energy is the correct direction for Japan. As recent TV programs have reported, some ordinary people are starting to invest in solar energy and sell electricity to power companies. Japan must build confidence that renewable energy has the potential to secure its energy supply. For example, it is said that during the

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**There is no higher priority for national defense," the Pentagon declared last year, than for the US to "replace its strategic nuclear triad and sustain the warheads it carries." In plain English, this means spending an estimated \$1.7 trillion to rebuild every component of the US nuclear arsenal: the entire three-legged strategic "triad" of intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), and long-range bombers. Military officials claim the existing force has become obsolete and inflexible, and thus unable to deter potential adversaries. In order to eliminate any doubt that America has the will and the capacity to wreak catastrophic retribution, they argue, we need to replace our current atomic weapons with even more terrifying ones. "To remain effective [as a deterrent force]," explained then-Secretary of Defense Jim Mattis in February 2018, "we must recapitalize our Cold War legacy nuclear forces."**

golden week in May 2018, 93 percent of the electricity supply in the Kyushu area was from renewable energy. If Japan could get through the past eight years nearly without nuclear energy, then it must be able to do

better in the future with the spread of renewable energy.

Finally, to solve the energy problem, Japan also needs revolutionary innovation. For example, Toyota has just launched the new generation of its Mirai (Future) hydrogen fuel cell vehicle. The

new Mirai not only has zero emissions, but also can produce and store electricity to provide energy in an emergency. The Toyota automobile is not only an energy consumer, but also an energy supplier. Mirai points to the future for Japan's energy policy. Similar innovation should take place in other industries.

Source: <https://thediplomat.com>, 21 March 2019.

**OPINION- Michael T. Klare**

**Making Nuclear Weapons Menacing Again**

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"Recapitalize," "modernize," "replace": These are the anodyne terms being used by the Pentagon and the Trump administration to describe their exorbitant plans to overhaul America's nuclear arsenal. With great-power conflict now the defining theme in US military strategy, the administration seeks weapons that can overawe Russia and China. At the same time, White House officials—led by National Security Adviser John Bolton—seek to extinguish any remaining arms-control agreements that might constrain US arms-acquisition efforts. Bolton has already orchestrated the US withdrawal from the Intermediate-Range Nuclear Forces (INF) Treaty, which covers short- and medium-range missiles, and has reportedly set his sights on scuttling the last remaining curb on intercontinental weapons, the New Strategic Arms Reduction Treaty (New START), when it comes up for renewal in 2021.

Refurbishing the nuclear arsenal and exiting arms-control agreements are all part of a White House effort to restore the coercive power of the US stockpile. At the height of the Cold War, no one doubted America's nuclear forces. From the early 1960s to the late '80s, this country possessed some 25,000 nuclear warheads—more than enough to eradicate every city, town, and village crossroads in the Soviet Union many times over. But with the Cold War receding farther into

the distance, the idea of employing such weapons in combat has become less credible. In 2009, President Barack Obama proclaimed his intent to "reduce the role of nuclear weapons in our national security strategy," and the following year he signed the New START agreement with Russia, resulting in a 50 percent reduction in the number of deployed US warheads.

While bringing relief to those of us who feared the devastating consequences of nuclear war, the move provoked dismay among hawkish Republicans and military leaders who view nuclear arms as the ultimate tool of national power. These policy-makers believe that vast stores of doomsday bombs and missiles allow the US to threaten and intimidate countries that either lack such weapons or rely on the US for its "nuclear umbrella"—as do most NATO powers and Japan. American leaders also insist on holding out the threat of nuclear-weapons use to scare off an

array of potential non-nuclear attacks on the US and its allies, such as a large-scale conventional Russian assault on NATO. For the US to retain its status as the world's paramount power, therefore, it must restore the fear-inducing nature of its nuclear arms.

The Pentagon's radical approach is spelled out in its most recent Nuclear Posture Review. Released in February 2018, it was the first official statement of US strategic policy since the April 2010 NPR. Whereas the earlier document promised to reduce the role of nuclear weapons in military strategy, the 2018 version reasserted their vital importance. And whereas the Obama-era NPR foresaw a gradual contraction of the US atomic arsenal, the Trumpian iteration calls for its modernization and expansion. Not only does the new NPR envision the replacement of all existing weapons with more capable systems; it also authorizes the acquisition of several new types of "low-yield" munitions,

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supposedly intended for use against conventional forces.

In making the case for a complete atomic overhaul, the NPR advances two broad claims: first, that the strategic triad's current components have become old and untrustworthy; and second, that potential adversaries—notably Russia and China—have taken advantage of America's complacency to modernize their own arsenals and acquire new classes of weapons, including some intended for potential use against NATO forces in Europe. "Over the past several decades," the NPR claims, "the US nuclear weapons infrastructure has suffered the effects of age and underfunding." Not so, it continues, for America's rivals. "While the US has continued to reduce the number and salience of nuclear weapons, others, including Russia and China, have moved in the opposite direction. They have added new types of nuclear capabilities to their arsenals, [and] increased the salience of nuclear forces in their strategies and plans."

One can easily dispute this. To begin with, Russia, like the US, has reduced the number of its deployed nuclear warheads in accordance with New START, while China has only made incremental upgrades to its relatively small stockpile. More to the point, the Pentagon has steadily improved the accuracy, durability, and destructive capacity of its own arsenal during this period, at a cost of many billions of dollars—spending some \$7 billion, for example, on upgrades to the Minuteman III ICBM, and another

\$15 billion on improved variants of the Trident D5 SLBM. Nevertheless, the perception that the US has somehow fallen behind in the nuclear-arms race remains pervasive within Washington's elite circles.

***The Strategic Triad***

So what exactly are the pentagon's plans for rebuilding the US arsenal? To begin with, we are speaking here of "strategic" nuclear weapons—that

is, weapons aimed at the homeland of another nuclear-armed power. (The US also possesses "nonstrategic" nuclear weapons, consisting mainly of gravity bombs stored in Europe for air delivery against enemy ground forces and installations.) This strategic arsenal is supposedly intended to deter an adversary from mounting nuclear or nonnuclear attacks on the US or its allies by threatening cataclysmic vengeance. And if "deterrence fails" (as such a nightmare scenario is usually worded), American weapons are designed to obliterate an adversary, including the destruction of as many of its launch capabilities as possible, thereby minimizing the number of American cities incinerated by retaliatory strikes. Bear in mind that any

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such outcome, even with reduced US urban annihilation, would result in a nuclear winter—a planet-wide dust cloud blocking the sun for years or even decades, which would likely bring human civilization to an end.

To ensure that America's deterrent capacity is never in doubt, the US has long relied on the triad, that tripartite combination of retaliatory weapons systems: ground-based ICBMs, submarine-borne SLBMs, and long-range bombers. Even if one or two



of these systems were lost to an enemy first-strike attack, the argument goes, the remaining one would still be able to retaliate on a massive scale, hence eliminating the temptation for an aggressor to ever mount such an assault. Missile-carrying submarines are considered particularly effective in this respect, as it's almost impossible to plot their locations in real time; the locations of ICBM launch facilities and bomber bases, however, are well established.

With the end of the Cold War, some nuclear strategists have questioned the need for a triad of retaliatory systems, arguing that two (or even one) would be sufficient, so long as it includes submarine-launched ballistic missiles. Nevertheless, Pentagon officials insist on the vital necessity of a three-legged deterrent. "Eliminating any leg of the triad would greatly ease adversary attack planning and allow an adversary to concentrate resources and attention on defeating the remaining two

legs," the NPR asserts. This is nonsense; no current or potential adversary possesses the ability to locate and destroy America's missile-carrying subs while they're at sea, and so the prospect of "defeating the remaining legs" of the US deterrent—and thereby escaping obliteration—is a total fantasy. Nevertheless, the triad remains an article of faith among US defense planners, and the Pentagon's plans for nuclear modernization encompass all three of its component systems.

In accordance with New START, the US strategic arsenal (like Russia's) is constrained in the number of nuclear-armed missiles and strategic bombers that can be deployed. When that treaty came into full effect in February 2018, the US was limited to a maximum of 700 deployed ICBMs, SLBMs, and nuclear-armed long-range bombers. From the

inventories compiled by the Arms Control Association and the Federation of American Scientists, we've learned that the Pentagon has allocated these weapons as follows: 400 silo-based Minuteman III ICBMs, each carrying one warhead; § Up to 280 multiple-warhead Trident II D5 SLBMs carried aboard 12 Ohio-class submarines, each capable of firing 20 missiles

(two additional subs and their missiles are usually out of commission at any given time for repairs and modernization); and 20 B-2 stealth bombers, each capable of carrying 16 gravity bombs, plus up to 46 B-52H bombers, each capable of delivering 20 nuclear-armed, air-launched cruise missiles

Under the Pentagon's current plans, every one of these systems will be replaced over the next few decades, at massive taxpayer expense. Preliminary research and design work on some of these replacement systems began during the Obama administration — a

concession that Obama made to secure Senate ratification of New START—but full-scale development only commenced after Trump took office, and the real expense of production and procurement lies ahead.

### ***Other Weapons Programs***

In addition to seeking upgraded replacements for all existing systems, the Trump administration also plans to acquire an array of so-called low-yield weapons (powerful enough, say, to destroy Hoboken, New Jersey, but not all of New York City) for use against enemy combat formations, command centers, and other battlefield components. Two such munitions were proposed in the 2018 NPR: a low-yield warhead to be fitted on some existing SLBMs, and a nuclear-armed,

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sea-launched cruise missile.

These weapons are needed, the NPR insists, because Russia has acquired its own low-yield munitions and believes they can be used to defeat superior NATO conventional forces in Europe without provoking nuclear retaliation by the US, because—or so it is claimed by Trumpian analysts—an American president would hesitate to employ the massively destructive nuclear weapons currently in the US arsenal, and thus risk reprisal in kind. If, however, American leaders possessed slightly less destructive weapons, the Russians could have no such confidence in US restraint and therefore would not be tempted to use their own low-yield nukes. This whole argument is malarkey: No Russian leader could ever assume an American president would refrain from retaliating with nuclear arms against a Russian nuclear strike (however “low yield”), and in any case the US already possesses low-yield nonstrategic bombs in Europe that offer precisely this option.

Aside from its lack of strategic relevance, the administration's plans to acquire new low-yield weapons is troubling because it suggests an intent to make nuclear weapons more “usable”—if not in practice, then as a coercive tool. Threats involving smaller nuclear arms may possess greater credibility—or so Pentagon analysts appear to think. As explained by Mattis, the NPR “calls for the diverse set of nuclear capabilities that provides an American president flexibility to tailor the approach to deterring one or more potential adversaries in different circumstances.” Cut through this gobbledygook, and we’re talking

about using nuclear weapons in a wide range of potential circumstances: Among those explicitly cited by Pentagon officials was a cyberattack on US command-and-control facilities.

The pursuit of low-yield nuclear weapons and America’s withdrawal from the INF Treaty also hint at a larger goal of Trumpian strategy: to enable the US to conduct attacks on critical Russian and Chinese military assets. Prior to the signing of the treaty in 1987, the US possessed ground-based weapons capable of striking Soviet battle formations and command centers with very little warning. Under the INF Treaty, all of these weapons (and their Soviet equivalents) were destroyed. Now, White House officials want new, far more advanced cruise and ballistic missiles with targeting purposes similar to those banned by the treaty. Even if armed with conventional warheads (the Pentagon is vague about the eventual payload of these proposed systems), any

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attack with these weapons would pose a threat to the Russian or Chinese homeland and so could prompt them to adopt a launch-on-warning posture for their own nuclear missiles. On March 13, the Pentagon indicated that it is preparing to flight-test two such weapons starting in August, assuming (as is expected) that the INF withdrawal has taken effect by that time.

### ***Stopping the Rush to Nuclear Enhancement***

The price tag on all of this is staggering. When the bipartisan Congressional Budget Office tallied up the costs of designing, producing, deploying, and maintaining (over a 30-year period) the nuclear weapons and support systems currently sought by the Department of Defense, it arrived

at the figure of \$1.2 trillion in 2017 dollars. At the current rate of inflation, this will entail public expenditures of at least \$1.7 trillion, not including cost overruns, which are always to be expected. Even by Pentagon standards, this is a lot of money.

For some, this will be a debate about dollars: Why spend so much money on new nukes when those dollars are more urgently required elsewhere?

Certainly, the extravagant cost of replacing all existing nuclear weapons is a good enough reason to oppose the Pentagon's plan. But while cost is a significant factor in the debate over nuclear-weapons modernization, it is essential to question the underlying strategic logic for replacing these weapons—or, for that matter, retaining the existing ones.

For many in the US and around the world, any use of nuclear weapons, however "limited," would produce a humanitarian catastrophe so vast as to outweigh any conceivable advantage from their deployment. It was this argument, more than any other, that persuaded the delegates to a July 2017 United Nations conference to adopt a Treaty on the Prohibition of Nuclear Weapons, which bans the production, possession, deployment, and use of such munitions. The US and the other nuclear-armed states have not

**The price tag on all of this is staggering. When the bipartisan Congressional Budget Office tallied up the costs of designing, producing, deploying, and maintaining (over a 30-year period) the nuclear weapons and support systems currently sought by the Department of Defense, it arrived at the figure of \$1.2 trillion in 2017 dollars. At the current rate of inflation, this will entail public expenditures of at least \$1.7 trillion, not including cost overruns, which are always to be expected. Even by Pentagon standards, this is a lot of money.**

**Alongside these efforts to secure passage of the Ban Treaty and move toward a nuclear-weapons-free world, many concerned activists and politicians seek to reduce the size of existing arsenals and prevent the acquisition of new, more dangerous weapons. As discussed earlier, many of the weapons sought by the Trump administration are more accurate and flexible in their potential utilization than the ones they are replacing. If deployed, they could increase the likelihood of early use in a crisis situation, while also stoking fears among America's adversaries of a US first strike. Resistance to the Pentagon's replacement plan, then, represents more than just opposition to nuclear arms in general; it also means opposition to a dangerous shift in US nuclear strategy toward greater reliance on nukes as an instrument of war and intimidation.**

signed the Ban Treaty (as it is called), but groups around the world are working to mobilize support for it and for the elimination of nukes in general, including the International Campaign to Abolish Nuclear Weapons (ICAN), Back From the Brink, and NuclearBan.US.

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Among those leading the charge against the Pentagon's replacement plan is Representative Adam Smith (D-WA), the chair of the House Armed Services Committee. "Nothing

endangers the planet more than nuclear weapons," he told Arms Control Today in December 2018. Speaking of the administration's call for low-yield munitions, Smith warned: "If you introduce them, you cannot predict what your adversaries are going to counter with, and an all-out nuclear war is the likely result, with the complete destruction of the planet." Smith is also highly skeptical of the need for a three-legged deterrent system and for a nuclear stockpile as large as the one we currently possess: "There's a compelling argument to be made that a submarine-based nuclear weapons approach alone gives us an adequate deterrent." But in any case, he added, "we could meet our needs from a national security standpoint with a lot fewer nuclear weapons."

In the weeks and months ahead, Smith and his colleagues on both the House and Senate Armed Services committees will be grilling Pentagon officials on these issues and introducing bills to block funding for new munitions. On March 12, the Department of Defense handed Congress its proposed budget for fiscal year 2020, including \$31 billion for upgrades to the strategic triad. Peace and antinuclear advocates will thus have multiple opportunities to question the cost and morality of US nuclear strategy and to campaign against dangerous additions to the arsenal. Concerned citizens can call or write their congressional representatives to voice support for such efforts. To keep abreast of news in this area, contact the Arms Control Association, the Friends Committee on National Legislation, Peace Action, or the Union of Concerned Scientists.

We cannot afford to leave nuclear-weapons policy to the "experts" in Washington or the few dedicated activists who have been keeping track of these fearsome developments over the years. We have entered a new era—one in which the

use of nuclear weapons has become far more likely—and it is crucial that we all become more familiar with these matters and their deadly implications.

Source: <https://www.thenation.com>, 21 March 2019.

**STATEMENT- Dr. Christopher Ashley Ford, Assistant Secretary, Bureau of International Security and Nonproliferation Conference on Disarmament**

The US is presently in the process of developing implementation plans for a path-breaking new initiative that is aimed at bringing countries together in a constructive dialogue, exploring ways in which it might be possible to ameliorate conditions in the global security environment so as to make that environment more conducive to further progress toward and indeed, ultimately to achieve nuclear disarmament.

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This initiative is a new one, and it represents both a conceptual break from, and an effort to build upon, the remarkable progress that has been made in bringing down our own nuclear arsenal, for example, since the end of the Cold War — a very dramatic reduction that one should never forget has already gotten us to the point of having brought ourselves down to perhaps

only about 12 percent of our Cold War peak, that is to say, an 88 percent reduction. Learning insights from that is important and this basic insight, which animates our own initiative, is that these kinds of impressive reductions in nuclear arsenals did not bring about the end of Cold War tensions, but rather instead resulted from them, from the easing of those tensions.

To be sure, this is, not in some respects, a new understanding. In fact, it was recognized explicitly in the text of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) itself more than half a century ago. As you will recall, the Preamble of



that treaty calls for easing tension and for strengthening trust between states “in order to facilitate” disarmament. But this insight, I would submit, about the centrality of security conditions is one that some folks may have forgotten during earlier post-Cold War years, during which the nuclear superpowers had the luxury of being able to coast forward in implementing sweeping disarmament steps for a long time merely on the strength of an easing of tensions that had at that point already occurred.

Now, with that fairly obvious understanding, but an important one, firmly in mind, the challenge I would submit that we all confront today is how to imagine the disarmament enterprise continuing to move forward in a world in which the prevailing security conditions have been worsening, rather than improving. In the face of these questions, our new initiative — which we have entitled, “Creating an Environment for Nuclear Disarmament” (CEND) — this new initiative aims to help the international community find a path forward by setting in motion a “Creating an Environment Working Group” (CEWG) process. Under its auspices, participating countries would work together first to identify a number of key questions or challenges that would need to be overcome along the road to eventual disarmament, and then to explore possible answers to those questions.

Now, we do not anticipate that this will be a magical panacea, of course, for the security challenges of the modern world that would have to be addressed along the path to disarmament are surely many and daunting ones. But, we do firmly believe that it is important to try to find a way forward, and we are convinced that whatever pathway may exist is one that necessarily runs first and foremost through addressing the security challenges that motivate nuclear weapons acquisition and nuclear weapons retention. We are also convinced that this is a challenge that all states need to address together, as Article VI of the NPT makes clear in requiring, for instance, that all NPT Parties pursue negotiations in good faith on effective measures for disarmament, rather than addressing itself solely to any

particular states or sub-category of states. Indeed, with the global elimination of nuclear weapons being explicitly the ultimate objective, it is clear to us that efforts to achieve this must include NPT non-Parties as well.

Many of you probably know this already, but I do think it is useful to repeat these points here in the Conference on Disarmament — which in so many ways has unfortunately been stymied in its efforts to develop new disarmament initiatives precisely because persisting regional and global tensions continue to drive certain Members to impede progress out of fear that under prevailing security conditions, such agreements would run counter to their perceived national interests. Repeating these points here in Geneva, I think, is also important because recent events — such as the impending collapse of the Intermediate-range Nuclear Forces (INF) Treaty as a result of Russia’s development and deployment of a growing arsenal of treaty-prohibited missiles that threaten the countries of Western Europe and East Asia alike — these events highlight the fact that without addressing some highly problematic trends in the global security environment, it will indeed be very hard, or perhaps impossible, to imagine a future for nuclear disarmament at all.

So it seems clear now that traditional approaches to disarmament can no longer meet the pressing needs of today’s world, nor can some of the more new-fangled approaches that have arisen out of some countries’ frustration with the fact that even more disarmament has not yet occurred. Traditional approaches, at least of the sort which we were fortunate to be able to employ in earlier post-Cold War years, these approaches have largely run out of steam — both because of the fact that the many weapons made unnecessary by the end of Cold War tensions have in fact already now been dismantled, and because conditions in the global security environment are today worsening rather than improving.

Nor does the newer effort of the Treaty on the Prohibition of Nuclear Weapons itself (TPNW), however desirous one might be of the end envisioned by that Treaty, offer in our view a viable

alternative. In part, this is because the TPNW's very structure assumes that one can declare nuclear weapons away without having first alleviated the problems of the underlying security environment that help drive nuclear weapons choices. But this is also because so much of the TPNW's advocacy discourse revolves around stigmatizing and demonizing the security choices of deterrence-reliant countries — that is to say, precisely those countries whose cooperation is essential for genuine disarmament efforts to bear fruit.

Please don't misunderstand me. We fully understand the frustrations that some have expressed as a result of disarmament still seeming so distant more than seven decades since US officials first proposed the bold disarmament initiative of the Baruch Plan to the United Nations.

But precisely because these issues are so important, we believe they deserve to be approached thoughtfully and in a spirit conducive to the kind of dialogue that it will be necessary to have if indeed we are to live up to the NPT Preamble's exhortation to ease tensions and strengthen trust between states in order to facilitate disarmament. It is in order to set in motion just this kind of dialogue that we have proposed the CEND process, and we very much hope that countries of goodwill will join us in helping make this work. Recreating a security environment in which nuclear weapons states find it in their mutual interest to advance nuclear disarmament will require political will and concerted efforts from all nations. Frankly, I believe that there is likely to be no path forward that does not involve sincere and constructive engagement by a broad range of parties.

So in response to our announcement of the CEND initiative, it has been gratifying that quite a few countries from different regions of the globe have already expressed an interest in joining this effort. I am particularly pleased that our Dutch colleagues have geared up to organize an academic colloquium — which will take place just a couple of weeks' time — that is specifically

designed to generate thoughtful insights and ideas to contribute to this endeavor. With the global disarmament discourse now increasingly coming to recognize and to focus upon the challenges of ameliorating problematic international security conditions, I hope that these initial steps will help catalyze further ones in a sort of "virtuous circle," perhaps to the point that even outside the specific discussions of the CEWG process, that is the Creating an Environment Working Group process, a thoughtful and constructive new ecosystem, if you will, of complementary and mutually-reinforcing initiatives can develop — upon the fruits of which all of us can all draw in finding better ways to address the security problems that stand in the way of future progress.

Nevertheless, I know that in some quarters our initiative is still regarded somewhat warily. But I do hope that more and more countries will see fit to participate, not least because it is surely some of the countries who are most suspicious of any disarmament initiative proposed by a nuclear weapons state — it is some of those very countries who may have in some regards the most to offer in the kind of constructive dialogue that we envision and that we hope to bring about.

In this respect, I think we can perhaps learn something from the well-regarded International Partnership for Nuclear Disarmament Verification (IPNDV), if you will — which is of course a voluntary, working-group-type process that is now in the second phase of its ongoing effort to explore how it might be possible to verify the disarmament of nuclear weapons pursuant to some potential future disarmament agreement. Much of the value of IPNDV has stemmed from its ability to bring together countries that have very different relationships to nuclear weapons in order to explore that verification problem together, to their mutual edification.

IPNDV, for example, has been helping nuclear weapons possessors better understand the degree to which meaningful verification might actually be possible; it has been helping dispel misconceptions among non-possessors as well about just how difficult verification can be; and it

has been helping all involved understand the degree to which such verification can in fact be done without spreading proliferation-sensitive knowledge. These are important lessons, but such constructive lesson-learning benefits hugely from having a good breadth of participation. Weapons states working only amongst themselves might be able to use their unique knowledge to devise very good ways to verify disarmament, for example, but non-weapons states must also be able trust the outcome, and IPNDV's collaborative exploratory process helps allow these questions to be explored together.

What we envision for CEND and its Working Group is a loosely analogous range of participants, coming together in an initial plenary in order to develop a constructive agenda, and then meeting in a range of working groups to try to address the challenges that they identify as part of that agenda. Just as IPNDV has benefited from a diverse range of participants from across the issues spectrum — weapons states, non-weapons states, nuclear alliance states, non-alliance states, and so forth — so we would also like to see each of the CEND groups include a geographically and politically diverse group of participants appropriate for each question. All participation, of course, will be entirely voluntary, but as your own governments evaluate whether and how you might be able to contribute, we would be delighted to see participants from across all of the world's relevant political divisions: weapons states, non-weapons states, developed countries, less-developed countries, nuclear alliance states, G-77 states, NPT States Party, non-NPT parties, and so forth. The price of admission, you might say, is no higher than simply having a sincere commitment to this kind of dialogue.

So that's a recap of our vision for this process, about which I do hope to have more to say in the near future as our thinking matures and more countries become involved. We encourage wide

participation, because this will increase the value of the process as a means through which the international community can begin to explore possible ways to overcome the challenges that lie ahead of us if a path is to be found to achieve the world envisioned in the Preamble and in Article VI of the NPT.

Source: <https://www.state.gov/>, 26 March 2019.

## NUCLEAR STRATEGY

### RUSSIA

#### Nuclear Race Defines Russia's Military Doctrine

"There is no first strike concept in the Russian [military] doctrine. There is a clear reference in our doctrine when and under which circumstances we can use our nuclear weapons: when there is an attack on the Russian Federation, when there is a threat for the existence of the Russian Federation as well as our allies."...False-Russian military doctrine allows for a first-use of nuclear weapons Russia's ambassador to the US Anatoly Antonov, was

asked during last week's Carnegie Endowment nuclear policy conference whether Russia would use nuclear weapons to prevail and win a conventional conflict that it was previously losing. Antonov categorically rejected such a notion, claiming it was a "fairy tale" and "lots of fake news."

the Russian ambassador stated: "There is no first strike concept in the Russian doctrine. There is a clear reference in our doctrine when and under which circumstances we can use our nuclear weapons: when there is an attack on the Russian Federation, when there is a threat for the existence of the Russian Federation as well as our allies."

Ambassador Antonov further denied the view

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held by many Western experts that Moscow's military doctrine includes an "escalate-to-deescalate" nuclear strategy. That strategy entails using a limited nuclear strike in response to a large-scale conventional attack that exceeds Russia's defense capacity in order to prevent a conflict from further escalating.

The current Russian military doctrine appears to allow a first-strike with nuclear weapons, even if Russia and/or its allies are threatened only by conventional weapons, not nuclear arms. Article 27. "Russia reserves the right to use nuclear weapons in response to a use of nuclear or other weapons of mass destruction against it and (or) its allies, and in case of an aggression against it with conventional weapons that would put in danger the very existence of the state." The Defense One newsletter, for example, asserted that this provision in Russia's military doctrine clearly allows for the first-use of nuclear weapons.

The text of article 27 is ambiguous at best, as it opens the door for interpretation of what constitutes a danger to the state and under which conditions Russia would launch nuclear weapons. Moscow habitually claims that the Russian state is endangered by Western policies. "Thus the doctrine is merely a data point, not hard evidence," wrote Stephen Blank, a senior fellow at the American Foreign Policy Council.

Most Western military analysts agree that there is a fundamental difference between what Russia says in its public documents and what it does to increase its nuclear arsenal. The country's procurement and deployment prioritize nuclear weapons by a huge margin. Pentagon officials have reported that Russia is aggressively building

up its nuclear forces and expected to deploy a total of 8,000 warheads by 2026. They will include both large strategic warheads and thousands of new low-yield and very low-yield warheads to support Moscow's new doctrine of using nuclear arms early in a conflict.

Senior US experts concluded in their 2017 report "A New Nuclear Review for a New Age," that Russian nuclear doctrine has undergone fundamental changes since the end of the 1990s, with an increasing salience of nuclear weapons. Open-source reports and testimony by US NATO officials indicate that Russia has developed an "escalate-to-deescalate" or, more accurately, an "escalate to win" nuclear strategy that includes the possibility of nuclear first use in regional and local conflicts in order to terminate a conflict on terms favorable to Russia. Former US Secretary of Defense James Mattis described the Russian nuclear doctrine as "escalate to victory and then deescalate." Russia's

present massive investment in a whole range of traditional and unorthodox nuclear weapon systems is proof that Russia follows Trutnev's thinking and advice in its massive nuclear build-up," concludes Forss.

Russia's declared military doctrine may indeed differ substantially from the real doctrine, just as Moscow's official statements in favor of nuclear non-proliferation appear at odds with its actions aimed at getting out of nuclear treaties. During last week's Carnegie Endowment conference, Ambassador Antonov... rejected the idea of broadening the treaty by including newly developed nuclear weapons and delivery systems. For Antonov that was a non-starter. He said the two sides had to stick with the provisions of the

**Ambassador Antonov further denied the view held by many Western experts that Moscow's military doctrine includes an "escalate-to-deescalate" nuclear strategy. That strategy entails using a limited nuclear strike in response to a large-scale conventional attack that exceeds Russia's defense capacity in order to prevent a conflict from further escalating.**

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treaty. This means leaving out new Russian nuclear weapons such as the Poseidon nuclear-armed submarine drone, the Burevestnik nuclear-powered cruise missile, and new missiles.

But Antonov is familiar with the changes in Russian nuclear policy since Vladimir Putin came to power. As Russia's ambassador to the United Nations back in 2008, he strongly resisted introducing US disarmament on the agenda of the UNSC's Advisory Board on Disarmament Matters. Evidently, Russia had changed course and no longer followed the Gorbachev's vision of a world free of nuclear weapons.

Source: <https://www.stopfake.org/>, 19 March 2019.

### **Russia's Top Diplomat Urges West to Resume Joint Arms Control Efforts**

Russia is calling on the US and other Western countries to resume joint efforts in the arms control sphere, Russian Foreign Minister Sergey Lavrov told a plenary meeting at the Geneva Conference on Disarmament ... "I'm sure that all of us will have enough wisdom and strength to overcome the crisis, preserve and enhance modern system of international deals on arms control and nonproliferation, adding new agreements there," Lavrov stressed.

.. "I hope that Western colleagues will be able to soberly assess the situation and will responsibly set priorities and resume collective efforts jointly with us on ensuring peace and security, including arms control," Russia's top diplomat said.

"The US' withdrawal from the Anti-Ballistic Missile (ABM) Treaty and the Intermediate-Range Nuclear Forces (INF) Treaty can result in a large-scale arms race that will be unpredictable in terms of its consequences. In contrast to the 1950-1970s, when the issue at hand was the two countries' strategic arsenals, the new arms race will be triggered by many countries' desire to view the presence of their own nuclear and missile capabilities as the only guarantee of their national security," he stressed.

Source: <http://tass.com/politics/>, 19 March 2019.

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## **USA**

### **US Criticizes Russia as Serial Violator of Arms Control Treaties**

A senior US official accuses Russia of breaching several arms control treaties considered critical for maintaining world peace. Assistant Secretary of State Yleem Poblete spoke at the U CD, the US assumed the rotating presidency of the body.

...She says there are many concerns regarding Russia's observance of the Biological Weapons Convention....She says Russia's development and fielding of a ground-launched cruise missile is in clear violation of the INF Treaty.

"The Russian Federation's violation of the INF Treaty poses a direct threat to European, US, East Asian,

and global security," Poblete said. "It is destabilizing and has a corrosive effect on arms control and disarmament."

The US warns it will withdraw from the INF Treaty in August 2019 if Moscow does not live up to the terms of the accord. Poblete refers to Russia as a malign actor. She says Russia is not a responsible actor that intends to uphold its obligations under arms control and disarmament agreements.

The Russian representative at the meeting did not react to the accusations. He said his country's foreign minister, Sergey Lavrov, would respond to what he called America's unfounded claims at a speech to the Conference on Disarmament...

Source: <https://www.voanews.com/>, 19 March 2019.

### **Fight over America's Nuclear Arsenal Heats Up in Congress**

As the Republican-led Senate and Democratic-led House prepare competing versions of the annual defense policy bill, they've been soliciting expert testimony to build their arguments on one of the key defense budget fights to come: How much nuclear modernization does America need?

Citing a \$1.2 trillion Congressional Budget Office estimate, House Armed Services Committee Chairman Adam Smith, D-Wash., supports nuclear modernization but argues that America can spend less and still deter its foes. He's called for America to adopt a no-first-use policy for nuclear arms and opposed both the Obama-era Long-Range Standoff Weapon and the Trump administration's low-yield W76-2 warhead.

Smith hosted a hearing on 06 March 2019 with outside experts at which Bruce Blair, a former US missile-launch officer and now a nuclear security expert at Princeton University, said the nation could maintain "a fully adequate deterrent threat" with a monad of five Ohio-class nuclear-powered submarines — rather than the established triad of submarines, bombers and intercontinental ballistic missiles.

The focus, Blair said, should be on repairing dangerous vulnerabilities in nuclear command-and-control infrastructure. "There's concern that the president who has only about five minutes under current strategy to make a decision on whether and how to retaliate to an attack — five minutes [in which he] may have to rely on information that has been corrupted," Blair said.

During the hearing, Virginia Democratic Rep. Elaine Luria, who served as a nuclear-trained Navy surface warfare officer and represents defense industry-heavy Hampton Roads, said the panel needs to be "steadfast in its support for maintaining and modernizing the [entire] nuclear triad." She called it "dangerous to allow someone to come before this committee and suggest the US should reduce or completely eliminate its stockpile." ...In recent weeks, Senate Armed Services Committee Chairman Jim Inhofe, R-Okla., and other nuclear modernization advocates have

diligently elicited public support from at least four flag officers to modernize the nuclear triad. Inhofe spelled out his game plan at a 28 February 2019 hearing on nuclear policy.

In multiple hearings so far this year, Inhofe has pointed to Russian and Chinese efforts to develop their own nuclear triads, and suggested the US has neglected its own aging arsenal. How right he is depends on who you ask.

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The US isn't on track to begin fielding replacements for its Cold War-era triad until the mid- to late 2020s, while Russia will have modernized nearly all of its

bombers, land-based missiles and submarines by 2021, according to Peter Huessy, a defense consultant and nuclear expert with the Mitchell Institute for Aerospace Studies. China is expected to have a fully modernized and expanded nuclear deterrent with mobile ICBMs, a new missile-armed submarine and long-range cruise missiles by the end of the next decade.

**The US military has refurbished and improved nearly all of its existing strategic and tactical delivery systems and many of the warheads they carry to last well beyond their planned service life.**

Kingston Reif, a nuclear policy expert with the Arms Control Association,

acknowledged that other nuclear-armed states, notably Russia and China, are upgrading their arsenals and have tested, produced and deployed more brand-new weapons than the US over the past decade or so. However, he added, the American nuclear arsenal remains unrivaled.

"The US military has refurbished and improved nearly all of its existing strategic and tactical delivery systems and many of the warheads they carry to last well beyond their planned service life," Reif said in an email to Defense News. "Though decades old, these forces are more capable than the originals."

*Source: Joe Gould, Excerpted from <https://www.defensenews.com/>, 20 March 2019.*

**BALLISTIC MISSILE DEFENCE**

**INDIA**

**ASAT Missile Project Went Into 'Mission Mode' 6 Months Ago, Says DRDO Chief**

After successfully conducting an A-SAT or anti-satellite missile test on 27 March 2019, the chairman of the DRDO revealed in an interview that the project to develop this rare missile capability was green-lit two years ago. "The NSA (Ajit Doval) whom we report to on strategic matters gave the direction to go ahead with the test and he had the concurrence from the Prime Minister. The development started a few years back and we went into mission mode in the last 6 months," said DRDO's Chairman G Satheesh Reddy in an exclusive interview. Reddy also added that in the last 6 months when the A-SAT missile programme entered "mission mode" level, about 100 scientists worked round-the-clock to reach the intended launch date target that was set.

The A-SAT missile was launched at approximately 11:16 AM on ...from Odisha's Balasore and within three minutes of launch, it successfully hit the intended target, a de-commissioned Indian satellite, in a "Low-Earth Orbit" at roughly 300 km from the Earth's surface. "Some time ago, our scientists shot down a live satellite 300 kilometres away in space, in Low-Earth Orbit... It was conducted under Mission Shakti, which was completed in three minutes," PM Modi said in his 10-minute televised address.

When asked the reason behind choosing a 300 km-altitude range for the target, Reddy said that protecting nearby space assets had to be considered. "As a responsible nation we wanted

to be sure all space assets were safe and all the debris decayed fast," added DRDO Chairman Reddy. Shortly after PM Modi's televised address announcing the success of "Mission Shakti", India's Ministry of External Affairs released a detailed note informing the World that India's actions were only to augment its deterrence capabilities and did not intend to trigger an arms race in space.

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**The Chinese Foreign Ministry released a statement responding to India's A-SAT test which read, "We have noticed reports and hope that each country will uphold peace and tranquillity in outer space." With the success of "Mission Shakti", India has now entered an elite club of three nations - US, Russia and China, with similar missile technology. This sort of missile application enables a country to attack and disrupt enemy satellites, thereby affecting communication networks. India's A-SAT missile was an indigenous build.**

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Source: <https://www.hindustantimes.com/>, 28 March 2019.

**RUSSIA**

**Russia's Sarmat ICBM Can 'Rip Any Missile Defence System to Shreds' – Official**

According to the official, once deployed, the Sarmat will become the backbone of Russia's strategic capabilities. Rogozin added that Roscosmos's enterprises are on schedule in all

major areas of the state defence order. State testing of the Sarmat began last year, with mass production expected to start in 2020 and the first deployment to Russia's Missile Troops set to begin in 2021. Able to carry a variety of combinations of warheads and decoys, the Sarmat is also believed to be capable of deploying up to 24 nuclear-capable Avangard hypersonic glide vehicles.

Once deployed, the Sarmat is expected to serve as a deterrent to a number of Pentagon initiatives, including the attempt to build an effective missile defence shield, and the so-called Prompt Global Strike massed precision-guided conventional weapon airstrike program, which aims potentially include the elimination of an adversary's strategic response before it can be launched.

Source: <https://sputniknews.com/>, 22 March 2019

**USA**

**Trickiest US Missile Defence Test is Finally Ready to Launch**

The Pentagon is about to attempt what's likely to be the most challenging test yet of the US military's ability to shoot down an incoming missile from an adversary such as North Korea or Iran, according to three people familiar with the plans. The Missile Defence Agency intends on 25 March 2019 to fire two interceptors tipped with the latest Raytheon Co warheads within seconds of each other in a test that hasn't been publicly announced. The first interceptor would attempt to crash into a dummy target representing an incoming intercontinental ballistic missile (ICBM). The second

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in California and Alaska is designed to defeat a missile attack.

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The action would be first missile defence test since a successful one in May 2017. The system also scored an interception in June 2014 after two that failed in 2010. Mr Mark Wright, a spokesman for the Missile Defence Agency, said in an email said he had "nothing to announce at this time." The US\$36 billion (\$48.69 billion) system of Boeing Co-managed radar, command links and 44 ground-based interceptors

The Pentagon is requesting US\$9.4 billion in fiscal 2020 for the agency's programs, including US\$1.4 billion for the ground-based segment - an increase from the US\$9.36 billion previously planned. The interception attempt is the programme's first operational flight test and "if successful, will have demonstrated a fundamental, yet crucially important, aspect of how the war-fighter will operate" the system in a missile attack on the US homeland....

Source: <https://www.straitstimes.com/>, 24 March 2019

**NUCLEAR ENERGY**

**JAPAN**

**Ministry Eyes Subsidy Plan for Nuclear Energy Generation**

The economy ministry is weighing the introduction of a subsidy system paid to electricity producers who use nuclear plants to offset massive costs to



meet tougher safety standards after the 2011 disaster. Officials said that those expenses have cut into the cost competitiveness of nuclear energy to such an extent that a subsidy system may have to be utilized, despite its longtime contention that nuclear energy is the most economical form of electricity generation. Given that the subsidies will end up being padded onto the electricity bills of households and businesses, it remains to be seen if the public will go along with shouldering the additional burden. The ministry plans to establish the subsidy system by the end of fiscal 2020 in line

with the scheduled review of the "feed-in tariff" system that set prices for purchasing electricity generated by solar and other renewable sources.

According to several sources and internal ministry documents, the plan would allow electricity producers that use nuclear plants to add a certain percentage to the price for which they sell the electricity to retailers. The reasoning among ministry officials is that nuclear energy provides added value as it does not pollute the environment or emit greenhouse gases. The ministry's proposal is modeled after the zero-emissions credit introduced in New York state that provides support to nuclear plants so they can continue generating electricity.

Despite the higher expenses needed to meet tougher safety standards for nuclear plants in Japan, the government continues to describe nuclear energy as a "base-load energy source" and it has set a target of increasing the ratio of electricity generated through nuclear energy to between 20 and 22 percent of total energy needs by fiscal 2030.

Also in that year, the government will begin requiring electricity retailers to procure 44 percent of sales output from non-fossil fuel energy sources, such as nuclear energy or renewable energy sources. Because of that obligation, retailers may eventually be forced to procure a certain ratio of electricity from nuclear producers, even if the subsidies make that form of power comparatively more expensive. Households and companies that purchase their electricity from such retailers would end up footing the bill. However, public opinion surveys continue to show opposition to the

resumption of operations at nuclear plants at levels close to double those who are in favor.

That opposition may make it more difficult for the economy ministry to push ahead with its subsidy program. Liberalization of the electricity market has also effectively done away with the regional monopolies once enjoyed by electric power companies. Producers who use renewable energy sources, such as wind and solar, can now sell their electricity to a much wider range of consumers, further intensifying cost competitiveness among different energy sources. A further spread of

renewable energy will only make the situation facing nuclear energy even more difficult.

Source: <http://www.asahi.com/>, 23 March 2019.

**USA**

**Illinois lawmakers Move Ahead with Bill to Benefit Nuclear Power Plants**

Illinois lawmakers have set

**That opposition may make it more difficult for the economy ministry to push ahead with its subsidy program. Liberalization of the electricity market has also effectively done away with the regional monopolies once enjoyed by electric power companies. Producers who use renewable energy sources, such as wind and solar, can now sell their electricity to a much wider range of consumers, further intensifying cost competitiveness among different energy sources. A further spread of renewable energy will only make the situation facing nuclear energy even more difficult.**

**Illinois lawmakers have set the wheels in motion to allow for power provider Exelon's nuclear fleet, as well as wind and solar power providers, to sell energy to a state authority that opponents say will give it preferential pricing over coal and natural gas sources. Testimony about how the legislation would affect costs for ratepayers differed, so what it means for a consumer isn't clear.**

the wheels in motion to allow for power provider Exelon's nuclear fleet, as well as wind and solar power providers, to sell energy to a state authority that opponents say

will give it preferential pricing over coal and natural gas sources. Testimony about how the legislation would affect costs for ratepayers differed, so what it means for a consumer isn't clear.

The move is a response to wholesale power grid operator PJM Interconnection Inc. separating Exelon's nuclear power from other sources' bids because Exelon gets subsidies from the state and would be able to undercut coal plants and others looking to sell energy commitments on the wholesale power market.

"The clean capacity procurement provisions in this bill are driven by new federal regulations that change the way the regional grid operator, PJM in the northern part of the state, procures its generating capacities," said Rep. Larry Walsh, D-Joliet. "Under these regulations, the Federal Energy Regulatory Commission, would undercut key provisions of the Future Energy Jobs Act ... including the development of clean energy like wind and solar and our existing clean energy resources."

The bill would only apply to Exelon's power delivery service provider ComEd. It would not apply to Ameren Illinois, which serves central and southern Illinois, because Ameren operates on a different wholesale power grid, but it would work to the detriment of many coal and natural gas power producers there... [zero emissions credit] is not preventing nuclear retirements, rather it is guaranteeing Exelon profit at the expense of ratepayers," said Judith Lagano, senior vice president of asset management for NRG Energy.

Even though the legislation passed unanimously, lawmakers from central and southern Illinois said the power industries in their areas were being

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ignored.' Nuclear power providers have seen two changes to Illinois law that they've benefited from. "Many of the older adults we advocate for every day are on fixed budgets and deserve affordable, reliable energy to cool and heat their homes," said Julie Vahling, associate state director of AARP Illinois. "In developing energy policy going forward, costs should always be a central consideration. "Similar legislation is being considered in Pennsylvania.

Source: <https://www.ilnews.org/>, 28 March 2019.

## NUCLEAR COOPERATION

### CHINA- FRANCE

#### Xi and Macron Discuss Reprocessing Project

Chinese President Xi Jinping and French President Emmanuel Macron discussed common goals for nuclear power and the fight against climate change in bilateral talks held on 25 March 2019 during Xi's three-day state visit to France. Macron's statement specifically mentioned the long-awaited project for cooperation to build a plant to reprocess China's used nuclear fuel.

Having begun using nuclear power in 1991 in a collaborative project with France, the first fuel from

Daya Bay is now 28 years old and suitable for reprocessing. A reprocessing plant constructed in the next few years would therefore have a ready programme of work in good time to service used fuel from country's 46 newer reactors as well as the 11 currently under construction.

Macron said "the dynamic" of the reprocessing project had accelerated in recent weeks. "We came to the moment of exchange on this point. We agreed to redouble our efforts for trade negotiations and the signing of the intergovernmental agreement can be completed promptly."

**Chinese President Xi Jinping and French President Emmanuel Macron discussed common goals for nuclear power and the fight against climate change.**

One of China's newest nuclear reactors, Taishan 1, was also a French project. Macron called its commercial commissioning a "breakthrough". Unit 2 at the site should be commissioned within months. The countries also cooperate in the ongoing construction of two EPRs at Hinkley Point C in the UK, of which China has a 33.5% stake through China General Nuclear.

**Ethiopian government is working in preparing the protocol terms required to sign an agreement with Russia in April 2019, to allow exploiting nuclear energy for peaceful purposes, local media states. Mehreteab Mulugeta, Director General for European Affairs at the Ethiopian Foreign Ministry, said this statement after he met in Moscow with Andrei Kemarsky, director of the Department of Africa at the Russian Foreign Ministry.**

...Alongside Xi and Macron's meeting, the chairman of China Nuclear Group, Yu Jianfeng, addressed a Sino-French Entrepreneurs Committee set up to discuss such strategic industries. Members of the select group comprised 15 top executive leaders from Bank of China, EDF, Framatome and Orano. Yu also expressed Chinese and French support for the Paris agreement, noting that there is an active use of nuclear energy to address global climate challenges.

...Noting the US declaration to withdraw from the Paris agreement, Macron and Xi reiterated their support for it. French statements placed the environment at the heart of Sino-French relations. Ahead of the meeting Macron said he would propose to Xi that 2018-9 be a "year of ecological transition to mobilise our businesses, our start-ups, our researchers, our students, our universities, our cities, regions, to demonstrate to the world that we, France and China, are able to make our planet great and beautiful again."

Both leaders stressed multilateral issues. They want to "build strong multilateralism on the climate issue. Indeed, we must respond to this emergency". Macron said a French initiative would be to push the G20 to adopt "the rules of

application of the Paris agreement". Xi echoed this and added his support for the United Nations Sustainable Development Goals (SDGs). These include several to which nuclear science and technology contribute, in particular SDG 7 on 'affordable and clean energy' and SDG 13 on 'climate action'.

*Source: World Nuclear News, 27 March 2019.*

## **ETHIOPIA-RUSSIA**

### **Ethiopia Plans to Sign Nuclear Deal with Russia**

Ethiopian government is working in preparing the protocol terms required to sign an agreement with Russia in April 2019, to allow exploiting nuclear energy for peaceful purposes, local media states.

Mehreteab Mulugeta, Director General for European Affairs at the Ethiopian Foreign Ministry, said this statement after he met in Moscow with Andrei Kemarsky, director of the Department of Africa at the Russian Foreign Ministry.

...We want that many Russian companies are part of the reform process in our economy, they get more involved and participate in the development of agricultural processing, infrastructure construction and other areas, he said.

*Source: <https://www.plenglish.com/>, 28 March 2019*

**Rosatom State Atomic Energy Corporation of Russia and the Ministry of Infrastructure of Rwanda signed two memoranda of understanding in Rwandan capital Kigali recently for cooperation in peaceful use nuclear energy. Nikolay Spassky, Rosatom Deputy Director General for International Relations and Claver Gatete, Rwandan Minister of Infrastructure signed the MoU on behalf of their respective sides. Memoranda set the foundation for cooperation framework in two key areas of development of the Rwandan program for the peaceful use of atomic energy; developing the human resources and raising public acceptance of nuclear energy.**

## **RUSSIA-RWANDA**

### **Russia-Rwanda Cooperation in Peaceful Use of Nuclear Energy**

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in Rwandan capital Kigali recently for co-operation in peaceful use nuclear energy. Nikolay Spassky, Rosatom Deputy Director General for International Relations and Claver Gatete, Rwandan Minister of Infrastructure signed the MoU on behalf of their respective sides. Memoranda set the foundation for cooperation framework in two key areas of development of the Rwandan program for the peaceful use of atomic energy; developing the human resources and raising public acceptance of nuclear energy.

Within the framework of the Memorandum of Cooperation on personnel training, the sides agreed to implement joint projects in the field of education and training of personnel to meet the needs of the nuclear energy and related industries in Rwanda. Joint projects include organising of personnel training programs for Rwandan nuclear infrastructure, development of close cooperation between specialised educational institutions, organising of joint short-term programs, teachers' training, students exchange and others.

Memorandum of Cooperation in the field of shaping positive public opinion on nuclear energy in Rwanda will involve joint work for preparation and implementation of public and media briefing activities. The work will include informing the public about nuclear technologies and their uses, interaction with journalists, experts, teachers and students, as well as organization of various events for them....

Source: <https://energybangla.com/> , 16 March 2019.

## **USA- SAUDI ARABIA**

### **Trump Admin Gives OK to Sell Nuclear Tech to Saudis**

The US Department of Energy has approved six

authorizations for US companies seeking to conduct nuclear related work in Saudi Arabia, according to two sources with knowledge of those approvals.

Federal law stipulates that companies obtain clearance from the US government for exporting nuclear technology to or engaging in the production or development of special nuclear material in Saudi Arabia. The authorizations—known as Part 810s, referring to a clause in federal regulations —allow US companies to divulge specific details about plans for working in Saudi Arabia and certain information about the nuclear technology. For example, a company would need a Part 810 to transfer physical documents, electronic media, or the “transfer of knowledge and expertise” to Saudi Arabia, according to the Department of Energy.

It's been unclear to what extent the US government, and US companies, have communicated with Riyadh about nuclear energy, especially in the wake of the brutal murder of journalist Jamal Khashoggi and amid claims by Democrats on the Hill that individuals in the national security community attempted to discuss a nuclear deal with Riyadh without going through the proper regulatory approval process.

The DOE authorizations, previously unreported, indicate that US companies are indeed moving ahead in their plans to engage with Saudi Arabia on nuclear technology and nuclear energy development. The companies began seeking contact with Riyadh in November 2017.

It's unclear which US companies have obtained authorizations. The Department of Energy has not responded to a Daily Beast Freedom of Information Act request. However, a congressional source said US companies have the option of

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requesting their authorizations remain private and do not land in the department's public reading room. The companies that received the Part 810s under the Trump administration have made such a request, according to that source.

IP3, a firm that includes former generals, diplomats, and energy experts, was mentioned in a recent report by the House Oversight Committee. That report said IP3 had developed a proposal for Saudi Arabia that was "not a business plan" but rather "a scheme for these generals to make some money." That report said Former National Security Adviser Michael Flynn had ties to the firm during his time working in the Trump administration.

...IP3 still is in conversations with Saudi Arabia and other countries across the Middle East about nuclear energy related work, a source with direct knowledge of the firm's plans told The Daily Beast. The firm's proposals, however, look much different than what's previously been reported, the source said, adding that they focus on security and protection of nuclear energy infrastructure.

In a hearing with Secretary of State Mike Pompeo Rep. Brad Sherman raised the issues of the part 810 authorizations and asked that Pompeo share those documents with the committee. "One thing that is in our interest is to prevent Saudi Arabia from getting a nuclear weapon," Sherman said. "What I've seen in this administration recently ... is an effort to evade Congress and to some extent evade your department and provide substantial nuclear technology and aid to Saudi Arabia while [the country] refuses to abide by any of the controls we would like to see regarding

reprocessing, enrichment."

Pompeo said the State Department is still looking into the assistance Saudi Arabia could receive from US companies on nuclear development and

**In a hearing with Secretary of State Mike Pompeo Rep. Brad Sherman raised the issues of the part 810 authorizations and asked that Pompeo share those documents with the committee. Pompeo said the State Department is still looking into the assistance Saudi Arabia could receive from US companies on nuclear development and how to prevent the country from developing nuclear weapons.**

how to prevent the country from developing nuclear weapons. The Daily Beast previously reported that as of late last year, members of the State Department were working actively to develop what's known as a 123 agreement under the Atomic Energy Act.

The deal would provide the overall structure for nuclear cooperation between the US and Saudi Arabia and

would help guide the process of American companies exporting their nuclear technology to Riyadh.

The Atomic Energy Act requires legally binding commitments from countries that work with US

**The deal would provide the overall structure for nuclear cooperation between the US and Saudi Arabia and would help guide the process of American companies exporting their nuclear technology to Riyadh.**

nuclear technology that they will not use those materials for making nuclear weapons. The law also mandates that the US has to approve any enrichment of uranium involving American technology. The US has

over two dozen 123 agreements with countries such as Egypt, the United Arab Emirates, and Canada...

*Source: Erin Banco, <https://www.thedailybeast.com/>, 27 March 2019.*

## **NUCLEAR PROLIFERATION**

### **PAKISTAN**

#### **Pakistan Willing to Take Steps towards Nuclear Non-Proliferation if India Does Same: DG ISPR**

Pakistan is willing to take steps towards non-proliferation of nuclear arms, but only if India does

the same, Pakistan military spokesperson Major General Asif Ghafoor told Russian state-owned news agency Sputnik in an interview. Pakistan is ruling out the possibility of using its nuclear weapons and sees them as more of a deterrence tool to prevent actual wars, said the director-general of Inter-Services Public Relations (ISPR), noting that even though the protection of the country was of the utmost importance, it would be “insane” to discuss the use of nuclear weapons.

“Since we have gone overtly nuclear, as India also, in 1998, our stance is that this capability eliminates the possibility of conventional war between the two states. So that is to say, this is a weapon of deterrence and a political choice. No sane country having this capability would talk about using it,” Maj Gen Ghafoor said. “Pakistan will undertake anything which is based on equality. You cannot tie the hands of Pakistan and keep India open. Anything that happens should happen for both countries,” he stressed.

### **Cooperation with Russia**

Maj Gen Ghafoor said Pakistan is negotiating defence industry cooperation with Russia in the areas of aviation, air defense systems and anti-tank missiles. “We are having the aviation, we are having the air defense, we are having the anti-tank domain, which we are negotiating. And that will be positive negotiations,” the military spokesperson said.

He further noted that Pakistan would welcome Russia’s role in mediating the recently inflamed tensions between Pakistan and India. “We would welcome any third-party mediation, which can bring peace in the region. And Russia is more than welcome.”

The official said Pakistan valued Russia’s role in

the Afghan settlement process and recognised Moscow’s importance in regional processes.

“We greatly value the relevance and importance of Russia in the region, especially what role Russia has lately played toward the Afghan reconciliation... Russia looks toward balance of power and multipolarity in the world. We value Russia’s voice as the voice of reason, and we would love if Russia, being a powerful country, plays its role which enables bringing peace in South Asia and beyond. And we expect that Russia will do it, as the efforts in fact being undertaken by Russia are generating good results,” the DG ISPR said.

**Pakistan is willing to take steps towards non-proliferation of nuclear arms, but only if India does the same, Pakistan military spokesperson Major General Asif Ghafoor told Russian state-owned news agency Sputnik in an interview. Pakistan is ruling out the possibility of using its nuclear weapons and sees them as more of a deterrence tool to prevent actual wars, said the director-general of Inter-Services Public Relations (ISPR), noting that even though the protection of the country was of the utmost importance, it would be “insane” to discuss the use of nuclear weapons.**

Source: <https://www.geo.tv/>, 25 March 2019.

## **NUCLEAR DISARMAMENT**

### **US: North Korean Nuke Work ‘Inconsistent’ With Disarmament**

North Korea’s work on nuclear weapons and missiles is “inconsistent” with its stated intent to move toward nuclear disarmament on the Korean Peninsula, the commander of American and allied forces in South Korea...

Army Gen. Robert Abrams, in testimony before the House Armed Services Committee, also said he has seen “little to no change” in North Korea’s broader military capabilities, citing its typical pace of winter troop exercises.

Asked by Rep. Mac Thornberry of Texas, the panel’s ranking Republican, where there has been any recent change in the North’s production of nuclear weapons and material and missiles, Abrams said, “Their activity that we’ve observed is inconsistent with denuclearization.” Abrams offered to provide details of that activity in a closed session.

At a meeting in Singapore last June 2018, President Donald Trump and North Korean leader

Kim Jong Un issued a joint statement that said the North “commits to work toward complete denuclearization of the Korean Peninsula.” But since then it has become clear that Washington and Pyongyang do not agree on the definition of “denuclearization.”

At their follow-up summit in Hanoi last in February 2019 , the two leaders failed to agree on a way ahead. North Korean officials said afterward that Kim would decide soon whether to continue talks with the US on his nuclear program and whether to continue his self-imposed moratorium on testing nuclear devices and launching ballistic missiles.

Randall Shriver, the Pentagon’s top Asia policy official, echoed Abrams’ remarks about a lack of movement toward North Korean denuclearization. “On our core area of interest and concern — the issue of denuclearization — we have not seen any progress to speak of,” Shriver said. He added, “We’re disappointed that they haven’t come to the table in a serious manner.”

“There is a palpable air of calm,” Abrams said. Over the past 14 months the US and North Korea have moved, he said, “from provocation to detente.” The US has about 28,500 troops in South Korea and is obliged to come to the South’s defense in the event it is attacked by the North.

Source: <https://www.apnews.com/>, 27 March 2019.

**NUCLEAR SECURITY**

**BRAZIL**

**Brazil Gunmen Shoot at Convoy Carrying Nuclear Fuel in Angra Dos Reis**

Violence in Angra dos Reis, site of the nuclear power plant, has increased recently. Gunmen have attacked a convoy of trucks carrying uranium fuel to a nuclear power plant near the Brazilian city of Rio de Janeiro, police say.

The convoy came under attack as it drove past a

community controlled by drug traffickers in Angra dos Reis, a tourist city 145km (90 miles) from Rio. Police escorting the convoy responded and a shootout followed. No-one was injured or detained.

The convoy reached the Angra 2 plant safely 20 minutes after the attack. The attack in the Rio-Santos highway is the latest in a series of violent incidents in an area popular with visitors. The

**The convoy was carrying uranium fuel fabricated in Resende, in Rio de Janeiro state, to supply Angra 2, one of the two nuclear power plants in Angra dos Reis, which began operations in 2001.**

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power plants in Angra dos Reis, which began operations in 2001.

...The uranium was being transported in armoured containers in a “natural state” and would not have offered any risk as it had the same level of radioactivity as when it is found in nature, Brazil’s nuclear agency Eletronuclear said. The agency, however, said the convoy “had not been attacked by bandits” directly - it was passing in the area at the moment a shootout was happening.

...Angra dos Reis Mayor Fernando Jordão urged the state’s government to improve security in the region. “We have nuclear plants here. It’s a sensitive area.”

Source: <https://www.bbc.com/>, 20 March 2019.

**NUCLEAR SAFETY**

**UAE**

**UAE Dismisses Qatar Allegations on Nuclear Plant Safety**

The UAE rejected Qatar’s allegations that its Barakah nuclear power plant poses security concerns. The UAE’s reaction came after Qatar called on the IAEA to intervene in a dispute over the \$24 billion power plant, which is still under construction. “The UAE adheres to its commitment to the highest standards of nuclear safety, security and non-proliferation as outlined in its nuclear policy in 2008,” Hamad Ali Al Kaabi, the UAE’s permanent representative to the IAEA, said in a

statement carried on the state-run WAM news agency on 20 March 2019.

“The UAE received in the past decade more than 10 peer-review missions covering various aspects from nuclear infrastructure, the legal and regulatory system, nuclear safety, security, emergency preparedness and non-proliferation and the reports of these missions are publicly available,” he added. He said that the nuclear power plant is currently more than 91% complete and is expected to be operational by 2020.

“The UAE does not believe that there is any concern regarding the safety of its nuclear power plant, however, we encourage interested countries to use the right venues where such information on nuclear safety can be provided and questions can be addressed,” the statement added. According to Thomson Reuters, Qatar sent a letter to the IAEA claiming that the Barakah plant poses a serious threat to regional

stability and the environment and called for a framework to ensure the safe operation of nuclear energy in the Gulf. Qatar alleged that a radioactive plume from an accidental discharge could reach its capital Doha in five to 13 hours and a radiation leak would have a devastating effect on the region’s water supply because of its reliance on desalination plants.

“Qatar believes that the lack of any international cooperation with neighbouring states regarding

**The UAE rejected Qatar’s allegations that its Barakah nuclear power plant poses security concerns. The UAE’s reaction came after Qatar called on the IAEA to intervene in a dispute over the \$24 billion power plant, which is still under construction. “The UAE adheres to its commitment to the highest standards of nuclear safety, security and non-proliferation as outlined in its nuclear policy in 2008,” Hamad Ali Al Kaabi, the UAE’s permanent representative to the IAEA, said in a statement carried on the state-run WAM news agency on 20 March 2019.**

Iran at the expense and security of its Arab Gulf neighbours.

**Qatar believes that the lack of any international cooperation with neighbouring states regarding disaster planning, health and safety and the protection of the environment pose a serious threat to the stability of the region and its environment,” the letter said. Relations between Qatar and its neighbours in GCC have been strained since the UAE, Saudi Arabia, Egypt and Bahrain severed ties with Doha in June 2017, accusing the emirate of supporting radical Islamic groups and maintaining close ties to Iran at the expense and security of its Arab Gulf neighbours.**

disaster planning, health and safety and the protection of the environment pose a serious threat to the stability of the region and its environment,” the letter said. Relations between Qatar and its neighbours in GCC have been strained since the UAE, Saudi Arabia, Egypt and Bahrain severed ties with Doha in June 2017, accusing the emirate of supporting radical Islamic groups and maintaining close ties to

The Barakah nuclear power plant, located in the Western Region of Abu Dhabi, is a joint project between the UAE’s Emirates Nuclear Energy Corporation (ENEC) and South Korea’s Korea Electric Power Corporation (KEPCO). Emirati officials say that Barakah is set to be the world’s largest single nuclear project, and upon completion will have a 5,600 megawatts (MW) capacity, with four 1400 MW reactors.

Source: <https://thearabweekly.com/>, 21 March 2019.

## **NUCLEAR WASTE MANAGEMENT**

### **USA**

#### **First of its Kind US Nuclear Waste Dump Marks 20 Years**

Twenty years and more than 12,380 shipments later, tons of Cold War-era waste from decades



of bomb-making and nuclear research across the US have been stashed in the salt caverns that make up the underground facility. Each week, several shipments of special boxes and barrels packed with lab coats, rubber gloves, tools and debris contaminated with plutonium and other radioactive elements are trucked to the site. But the Waste Isolation Pilot Plant has not been without issues.

A 2014 radiation leak forced an expensive, nearly three-year closure, delayed the federal government's cleanup program and prompted policy changes at national laboratories and defense-related sites across the US. More recently, the US Department of Energy said it would investigate reports that workers may have been exposed last year to hazardous chemicals. Still, supporters consider the repository a success, saying it provides a viable option for dealing with a multibillion-dollar mess that stretches from a decommissioned nuclear weapons production site in Washington state to one of the nation's top nuclear research labs, in Idaho, and locations as far east as South Carolina.

If it weren't for the Waste Isolation Pilot Plant, many containers of plutonium-contaminated waste would be outside, exposed to the weather and susceptible to natural disasters, said J.R. Stroble, head of business operations at the Department of Energy's Carlsbad Field Office, which oversees the contractor that operates the repository. "The whole purpose of WIPP is to isolate this long-lived radioactive, hazardous waste from the accessible environment, from people and the things people need in order to live life on Earth," he told The Associated Press.

Stroble and others in the communities surrounding the repository are steadfast in their conviction that the facility is a success. They point to 22 sites

around the nation that have been cleaned up as a result of having somewhere to put the waste—including Rocky Flats, a former nuclear weapons plant outside Denver that had a history of leaks, spills and other violations. For critics, that success is checkered at best since the repository is far from fulfilling its mission. "It's 80 percent through its lifetime, and it has disposed of less than 40 percent of the waste and has cost more than twice as much as it was supposed to," said Don Hancock

with the watchdog group Southwest Research and Information Center. "How great of a success is that?"

Officials initially thought the facility would operate for about 25 years. Rather than wrapping up in the next few years, managers have bumped the timeline to 2050. The repository was carved out of an ancient salt formation about a half-mile (0.8 kilometer) below the

surface, with the idea that the shifting salt would eventually entomb the radioactive waste. It was the National Academy of Sciences in the 1950s that first recommended disposing of atomic waste in deep geologic formations. Scientists began taking a hard look at the New Mexico site about two decades later. The scientists had to convince themselves and then federal regulators that it was safe. One of their tasks was determining that the ancient seawater trapped between the salt crystals and bound up in thin bands of clay within the salt deposit would pose no problems thousands of years later.

"It was exciting to be working on what was then going to be the world's first deep-geologic repository for that class of waste," said Peter Swift, a senior scientist at Sandia National Laboratories. "Nothing that radioactive had been put that deep underground before. And that's still true 20 years later."

While the real test will be what happens

**Twenty years and more than 12,380 shipments later, tons of Cold War-era waste from decades of bomb-making and nuclear research across the US have been stashed in the salt caverns that make up the underground facility. Each week, several shipments of special boxes and barrels packed with lab coats, rubber gloves, tools and debris contaminated with plutonium and other radioactive elements are trucked to the site. But the Waste Isolation Pilot Plant has not been without issues.**

generations from now, Swift is confident in the science behind the project. But the wild card in whether the repository is ultimately deemed a success will be the human factor. After all, missteps by management were blamed for the 2014 radiation release. With some areas permanently sealed off due to contamination, more mining will have to be done to expand capacity. The federal government also is spending more than a half-billion dollars to install a new ventilation system, sink more shafts and make other upgrades aimed at returning to “normal business.”

Hancock and some former elected leaders involved in early discussions about the facility worry about the subterranean landfill becoming a dumping ground for high-level waste or commercial nuclear waste. But it would take an act of Congress to expand the repository’s mission, and getting consent from New Mexico’s delegates would be a tall order since the federal government still has no long-term plan for dealing with such waste. Nevada’s proposed Yucca Mountain project is mothballed, and no other permanent disposal proposals are on the table.

Toney Anaya, who served as New Mexico governor in the 1980s, remembers the heated debates about bringing more radioactive waste to the state. He said there were concerns about safety, but the promise of jobs was attractive. Some also argued New Mexico had a moral obligation given its legacy of uranium mining and its role in the development of the atomic bomb. Another former

governor, Bill Richardson, was on both sides of the tug of war—first as a young Democratic congressman who wanted to impose environmental standards and keep 18-wheelers loaded with waste from passing through the heart of Santa Fe. Then, he became US energy secretary during the Clinton administration and pressured the state to clear the way for the repository to open.

“For New Mexico, we’ve done our share of storing waste, and we’ve done it safely and effectively,” Richardson said. “It’s provided jobs, but I just think the future of the state is not nuclear.” Southeastern New

Mexico’s ties to nuclear run deep and will continue for at least the next 30 years under the plans being charted now. Robust state regulation will be key in ensuring responsible management going forward, said Hancock, with the watchdog group. The problem, he said, is that besides the Cold War-era waste that has yet to be dealt with, the federal government and nuclear power plants keep generating more. “We need to decide what our capacities are actually going to be—how much nuclear power waste are we going to create, how much nuclear weapons waste are we going to create—so that we can then put our arms around the problem,” Hancock said.

Source: <https://phys.org/>, 23 March 2019.

**Rick Perry Defends Trump Camp Plan for Nevada Nuclear-Waste Storage Site**

Energy Secretary Rick Perry...defended the Trump

**22 sites around the nation that have been cleaned up as a result of having somewhere to put the waste—including Rocky Flats, a former nuclear weapons plant outside Denver that had a history of leaks, spills and other violations. For critics, that success is checkered at best since the repository is far from fulfilling its mission. “It’s 80 percent through its lifetime, and it has disposed of less than 40 percent of the waste and has cost more than twice as much as it was supposed to,” said Don Hancock with the watchdog group Southwest Research and Information Center.**

**But it would take an act of Congress to expand the repository’s mission, and getting consent from New Mexico’s delegates would be a tall order since the federal government still has no long-term plan for dealing with such waste. Nevada’s proposed Yucca Mountain project is mothballed, and no other permanent disposal proposals are on the table.**

administration's plans to collect and store nuclear waste from around the country in a site northwest of Las Vegas, saying that the current system of scattered storage sites in dozens of states was unacceptable.

Perry held up a map at a budget hearing before a House Appropriations subcommittee, showing lawmakers what he said were the more than three dozen states currently hosting disposal sites for spent nuclear fuel. "We have to find a solution," Perry told lawmakers. "Thirty-nine states as repositories is not an appropriate solution." The Trump administration is seeking \$116 million in this year's budget on

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Opposition from Nevada previously has helped put the plan on a back-burner. The Trump administration has revived the Yucca Mountain proposal. Nevada Democratic Gov. Steve Sisolak said earlier this month that the Trump administration was "attempting to shove even more unwanted toxic material down our throats."

*Source: <https://www.japantimes.co.jp/>, 27 March 2019.*



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 K.K Nohwar, PVSM VM (Retd).

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