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## OPINION – Tom Nichols

### Leaving the INF Treaty is a Gift to Russia

If President Donald Trump goes through with his threat to withdraw from the INF Treaty, he will make a serious mistake that will not only destabilize European security and undermine NATO, but could lead to dangerous consequences for strategic nuclear stability between the United States, Russia and China. To understand why dumping the INF Treaty is so dangerous, it's important to understand why the treaty was signed in the first place. During the Cold War, the superpowers both decided to field systems that filled the gap between the use of small battlefield nuclear weapons and the horror of a strategic nuclear exchange by creating a class of "intermediate" weapons that could conduct nuclear war in the European theater, but without reaching the U.S. and Soviet heartlands—at least not immediately.

The problem, of course, is that one man's "intermediate-range" weapon is another man's "strategic" weapon. Putting aside war-gaming delusions about sustainable command and control, such strikes would be hard to discriminate from strategic strikes, and catastrophic escalation would be all but certain. Ronald Reagan and Mikhail Gorbachev solved this problem by leaving both battlefield and strategic

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arms in place but severing the link between them that could lead too quickly to general nuclear war. Critics of the original treaty decried this as undermining NATO's security, but in reality nothing had changed: The Soviet Union still had conventional superiority, and NATO still had a doctrine of nuclear first-use in the event of invasion.

#### ***So What has Changed?:***

The chief argument now for withdrawing from the INF Treaty is that the Russians are violating it. This is undeniable. The Russians are in fact testing weapons

at prohibited ranges in direct violation of the treaty. They are doing this, however, not because they are strong, but because they are weak. The

Russians, ironically, are now in the position NATO was in during the Cold War, a conventionally inferior power whose only equalizer is nuclear weapons. Unlike NATO, however, the Russians are not in a defensive position, but rather remain a revisionist power bent on threatening their neighbors. They are conspicuously violating the treaty as an attempt to intimidate the Europeans by raising the specter of a regional nuclear war if Russia does not get its way in the event of a conflict.

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This is why scrapping the INF Treaty plays right into the favored Russian scenario, in which the burden of nuclear escalation would rest, once again, upon NATO. Right now, Russian strategy in Europe is likely centered on seizing a small piece of NATO territory, sitting on it for an extended period to prove that Article V is a sham and then threatening tactical nuclear use if NATO tries to drive them out. Proponents of re-nuclearizing the theater would argue that this is precisely why the United States must have a symmetrically configured theater deterrent, so that any Russian threat could be balanced with a corresponding American threat.

**The better answer is to close off any such option to the Russians by bolstering NATO's conventional capabilities, and thus warn the Russians that even if they win, they lose. They might be able to muster a locally superior force and take territory, but they cannot defend it. They will inevitably be driven out, and then the burden of escalation will fall upon them, not us, which is exactly how it should be. If they invade, they will be defeated. If they escalate, they will be destroyed—and by choices they, not we, will make.**

That would be a better argument if it were still 1985. The problem for these nuclear enthusiasts—one they omit by selective memory or poor strategic judgment—is that there is no longer a central front between NATO and Russia on which such exchanges would take place. NATO's only choices (as Russia knows) would be to respond with nuclear use on our own allies or on Russian

territory, which would raise the escalatory danger far beyond whatever was at stake in a small, localized conflict. The Americans would blink, Russia's point would be made, and NATO would eventually dissolve.

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There are also loose arguments being made that the United States needs to exit the treaty so that it can create forces to counter the Chinese in the Pacific. This makes no sense. What deterrent purpose is served by intermediate-range nuclear arms that is not being served already? Is this predicated on some sort of "limited nuclear war in Asia strategy" that has not been enunciated, or likely does not even exist? Where would we base such weapons? Japan? South Korea? The China rationale is more likely a fig leaf than

an actual plan, but if it reflects some sort of a new line of thought about nuclear war in the Pacific, then it deserves more debate rather than being treated as an afterthought to exiting the INF Treaty.

*Source: <https://nationalinterest.org>, 23 October 2018.*

OPINION – Franz-Stefan Gady

**Bolton's Tool to Shatter China-Russia Military Ties?**

With the recent announcement by U.S. National Security Advisor John Bolton that the United States is considering terminating Ronald Reagan's landmark 1987 INF Treaty, much analysis has focused on the impact of that decision on U.S.-Russia and U.S.-China relations. Relatively little, however, has been said about how the INF treaty termination could impact Russia-China ties, especially in the military sphere.

**Indeed, Russia has repeatedly threatened to dump the INF treaty unless China is included in its provision given the latter's large arsenal of conventional and nuclear-tipped land-based intermediate range cruise and ballistic missiles. Moscow feels at a distinct military disadvantage vis-à-vis Beijing in the Far East as a result of the arms control agreement given that intermediate-range systems make up about 95 percent of China's missile force.**

Indeed, there is reason to assume that one of John Bolton's strategic calculi in his push for a unilateral U.S. treaty withdrawal is its possible detrimental impact on burgeoning China-Russia military relations. The rationale here is simple: Despite a recent uptick in military cooperation between the two countries as, for example, seen during the Vostok (Eastern) 2018 military exercise this September, Beijing and Moscow continue to eye one another with suspicion when it comes to the deployment of military assets in proximity to the Sino-Russian border.

This mistrust in particular could potentially be amplified if one side were to suddenly deploy longer-range precision-strike capabilities near the border—a move that the Russian military has reportedly time and again been contemplating to offset Chinese growing military strength in the region. Indeed, Russia has repeatedly threatened to dump the INF treaty unless China is included in its provision given the latter's large arsenal of conventional and nuclear-tipped land-based intermediate range cruise and ballistic missiles. Moscow feels at a distinct military disadvantage vis-à-vis Beijing in the Far East as a result of the arms control agreement given that intermediate-

range systems make up about 95 percent of China's missile force.

To recap, the INF treaty bans an entire class of U.S. and Russian ground-launched ballistic and cruise missiles with ranges of 500 to 5,500 kilometers. As a result of the treaty, the Soviet Union and United States destroyed a total of 2,692 short-, medium-, and intermediate-range missiles by 1991. It is considered to be one of history's most effective arms control agreements. However in 2014, the U.S. government began accusing Russia to be in violation of the treaty by testing an illegal ground-

launched cruise missile, the Novator 9M729 cruise missile (NATO designation: SSC-8) rumored to have a range of around 2,000 kilometers.

There has been speculation that this SSC-8 is the ground-based version of the 3M14T or 3M14K (NATO designation: SS-N-30A), the land-attack variant of the Kalibr supersonic anti-ship cruise missile, with an estimated range estimated of up to 2,500 kilometers. According to some reports, the SSC-8 can be fired from the road-mobile 9K720 Iskander-M (NATO reporting name SS-26 Stone) launcher. Consequently, should the SSC-8 be operationally deployed in larger numbers (according to some reports, the missile was already operationally deployed in 2017), it very easily could be attached to existing Iskander-M brigades. In fact, the publicly known deployments of the Russian Ground Force's Iskander-M brigades perhaps best illustrates Russia's ongoing concern over China's military buildup in the region.

The Russian military currently deploys four 9K720 Iskander-M missile brigades in Russia's Eastern Military District (MD) bordering China, which is twice the number of brigades stationed in the other MDs (Central, Southern, and Western). While this is partially due to the enormous geographical

scope of the district, a closer look at the missile systems and their geographical disposition underline that their principle purpose is to strengthen Russia's conventional and nuclear deterrence against China.

The two Iskander-M brigades in Russia's Far East — the 107th and 20th — are based in the Jewish Autonomous Oblast and Primorsky Krai, respectively. Both of these regions border China. The latter region also encompasses Russia's 17 km (10.5 mile) land border with North Korea, suggesting that the primary purpose of the two far eastern brigades is containing China and responding to contingencies on the Korean Peninsula. At the same time, the basing locations of the Eastern MD's other two Iskander-M brigades likewise point to a focus on China; the 103rd Missile Brigade is stationed in Russia's Republic of Buryatia, which borders Mongolia, while the newly formed 3rd Missile Brigade is based in Gorny (once known as Chita-46) in Zabaykalsky Krai — a region that borders China's Inner Mongolia Province.

Consequently, while the principal purpose of the SSC-8 would be to strike the U.S. ballistic missile shield components, as well as NATO air defense systems located in Europe, it nonetheless could serve an important role in Asia as part of Iskander-M units (the Iskander-M ballistic missile has an estimated range of 415-500 kilometers). In other words, an upgraded GLCM with an operational range of 2,000 kilometers attached to Iskander-M brigades in Russia's Far East would enhance Russia's

conventional and nuclear deterrence posture vis-à-vis China.

Expanded Russian military capabilities, especially in the area of conventional and long-range long-range precision strikes, would be bound to make China uneasy and in turn would force the PLA to reposition some of its intermediate-range missile units away from where they could threaten military installations of the United States and its allies in Asia. This remilitarization of the Sino-Russian border would be a clear win for Washington. How likely is such an escalation spiral

given the recent increase in Sino-Russian military cooperation? The answer to this question will depend on numerous factors including future moves by the U.S. (e.g., will the U.S. deploy GLCMs to Asia and Europe or station other additional

long-range precision strike weapons systems in these regions) as well as political considerations by Chinese and Russian leaders. As Eugene K. Chow noted in 2017, we have to be cautious not to over-interpret future moves : "[T]he military buildup in the region is the legacy of Sino-Russo tensions, Cold War military strategy and a lack of funding to build new Russian military infrastructure."

Yet, it is important to reiterate that China and Russia have a comprehensive strategic partnership, but not a military alliance. Notably, both sides have also repeatedly stressed the non-alliance aspect of their military ties in the past. Part of the reason for this is the continuing

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existence of mutual mistrust between the two neighboring countries. While it certainly was not John Bolton's top consideration, one of the intended or unintended consequences of his push to abandon the INF treaty could be an increase in Sino-Russian tensions and a slowdown in deeper military cooperation.

Source: <https://thediplomat.com>, 24 October 2018.

**OPINION – Michael Hirsh**

**Would INF Withdrawal Recreate a Nuclear Hair-Trigger World?**

Generations have come and gone since the worst days of the "balance of terror" that defined the Cold War. Most Americans alive today don't remember diving under their school desks in practice drills, quaint government plans for fallout shelters and evacuation routes, or the frenzied debates over which country might decide to rain down thermonuclear fire first and how many "megadeaths" would occur.

That's because, starting around four decades ago, Washington and Moscow began walking the world back from the nuclear precipice by negotiating a slew of arms control agreements. With the Trump administration's decision to withdraw from the INF Treaty—followed, possibly, by the START agreement—this safer world could well come undone.

The INF Treaty, signed in 1987, was a keystone of those early efforts to ease tensions. It sought to end the hair-trigger calculus embedded in the missiles that ringed the perimeter of the Soviet bloc, giving both sides scant minutes of warning before Armageddon. The INF Treaty was, as then-U.S. President Ronald Reagan said, the first nuclear treaty to eliminate, not just limit, nuclear arms. The United States and the Soviet Union pledged to destroy and permanently forswear all

of their nuclear and conventional ground-launched ballistic and cruise missiles with ranges of 500 to 5,500 kilometers (300 to 3,400 miles).

Now, Washington plans to withdraw from the INF Treaty, according to U.S. President Donald Trump, who says that Russia has violated the agreement for years. Coupled with the prospect of no extension to the START, Washington may thus be opening the door to a return of a terrifying past. The Trump administration is not just threatening to roll back a slew of protections and safety precautions; it is also quite consciously restarting the arms race, with a full nuclear modernization plan that could cost up to \$1.6 trillion over 30 years, according to an October 2017 report from the Congressional Budget Office and other accounts.

The Russians and Chinese will undoubtedly respond, but with the cessation of treaty-authorized inspections, governments will be far more in the dark about what the other side is building. "It's extremely worrying to leave us without eyes and ears inside Russian strategic forces for the first time in 40 years," said Alexandra

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Bell, a former senior Obama administration official now at the Center for Arms Control and Non-Proliferation. "There's no way to get information except with reciprocal inspections. It's an incredible own goal to take away something our own military wants."

Trump said that he would increase the U.S. nuclear stockpile—including against China—"until people come to their senses." He didn't define what that meant but suggested that the resurrection of a nuclear threat from Washington will bring other countries into submission. "It's a threat to whoever you want," Trump said. "And it includes China, and it includes Russia, and it includes anybody else that wants to play that game. You can't do that. You can't play that game on me."

Together, these moves could eventually leave the world facing a new kind of balance of terror, and on several different fronts. It's no longer just about Washington and Moscow. China, which was for much of the Cold War a nuclear minnow and remains a much smaller nuclear power than the United States or Russia, has now stockpiled thousands of missiles, including tactical, cruise, medium-range, long-range, and intercontinental ballistic missiles launchable from air, land, and sea. That arsenal includes the mobile-launched Dongfeng-41, believed to be the world's longest-ranged missile at a projected 7,500 miles. Until now, Beijing has been restrained about tipping those missiles with nuclear warheads: It keeps an estimated 250 to 300 warheads, about as many as France. But that could begin to change if tensions rise and no treaty is in place to contain them.

China had already been modernizing the country's nuclear forces as part of the broader competition with the United States, said Caitlin Talmadge, a Georgetown University specialist in U.S. defense policy. "It isn't obvious that this one area of competition is going to be dramatically more important than areas like missile defense, cyberspace, conventional missiles, or surface and undersea warfare where the U.S. and China are already trying to outdo each other and have been for a while," Talmadge said.

The Trump administration claims that Russian President Vladimir Putin is responsible for the INF Treaty's failure. In February 2007, Putin declared that the treaty no longer served Russia's interests. Ever since, Russia has been violating it, claiming that its missile deployments are justified by U.S. missile defense. Even so, the violations have been

relatively small-scale, mainly involving the construction of about 40 to 50 prohibited SSC-8 cruise missiles, said Matthew Bunn, a nuclear arms specialist at Harvard University's Belfer Center. Bunn noted that the United States is also technically violating the treaty by taking a sea-based missile launcher, the Aegis, and putting it ashore. "If the shoe was on the other foot, we'd be screaming about that," he said.

Even some Russian officials are worried about what the junking of the INF Treaty could mean in the long run. In the decades after the INF was signed, a slew of protective measures—especially the 1991 Nunn-Lugar program to fund weapons dismantling in former Soviet states—not only brought the super powers back from the precipice but also secured nuclear materials from terrorists. Bunn said that when he was in Moscow earlier this year, Sergey Rogov of the Institute of U.S. and Canadian Studies—who has ties to Russian legislators—started off a conference by suggesting that "leaving the INF could bring the whole structure of arms control crashing down."

That seems to be exactly the scenario that Trump's hawkish national security advisor, John Bolton, wants.

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Trump often declares his abhorrence of nuclear weapons, but here he appears to be following the agenda of Bolton, who comes out of an old tradition of Cold War hard-liners who opposed arms control, believing that such self-limiting accords only hindered America's ability to create superior technology and dominate the battlefield.

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Hawks believe it was their aggressive arms buildup—not detente and nuclear reduction treaties—that effectively won the Cold War when the Soviet Union collapsed economically in the face of U.S. defense spending and technological advances. Based on the 2018 National Defense Strategy, the Trump administration believes the country is back in a similar place, and it sees a need to free the United States of any treaty restrictions on an arms buildup. “The central challenge to U.S. prosperity and security is the reemergence of long-term, strategic competition” from Russia and China, it says. “The drive to develop new technologies is relentless.”

Bolton advocated withdrawing from the INF treaty “as far back as 2011, before Russian violations came to light,” noted Lynn Rusten, who served as senior director for arms control on former President Barack Obama’s National Security Council. She, like many members of the military, also said Bolton’s idea of deploying ground-based missiles in an island chain around China is fanciful and unnecessary, as U.S. air- and sea-based missiles are deemed sufficient. Previously, Washington usually was the one seeking to tamp down tensions by proposing new arms control treaties. Now, it is Washington that is unilaterally withdrawing, a virtual invitation to Putin and Chinese President Xi Jinping to build up their forces as they please.

There’s still a chance to salvage the INF Treaty, which requires six months’ notice to leave. Rusten and other INF Treaty supporters hope the treaty can be salvaged if Russia agrees to comply and if Congress puts pressure on Trump. “This isn’t a done deal yet, and hopefully there’ll be some reconsideration,” she said. “The Russian violation is a problem, but it is not helped in any way by our withdrawal. This only sets the U.S. up

to take the blame.” But most observers expect U.S. withdrawal and the start of a new era in which nuclear weapons are again part of the strategic calculus between great powers. Said Bunn: “Not that long ago, I had a friendly debate with a senior Republican colleague about whether U.S.-Russia relations were the most dangerous since the early 1980s, which was my viewpoint, or since the Cuban missile crisis, which was his viewpoint. If we have no treaties at all regulating the strategic balance, that’s a big deal.”

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*Source: <https://foreignpolicy.com>, 23 October 2018.*

**OPINION – Joey Watson**

**Does Australia Need a Nuclear Arsenal? And what would be the Cost?**

Nestled in the native bushland of Jervis Bay on the New South Wales south coast are the concrete footings of a nuclear power station that was never built. The construction, which began during John Gorton’s brief prime ministership in the late 1960s, was to be Australia’s first foray into nuclear energy generation. The reactor would have been able to generate plutonium which, under the auspices of the Australian Atomic Energy Commission, could be used to manufacture nuclear weapons. But the project did not survive an abrupt change of leadership and Australia ended up riding out the remainder of the Cold War as a non-nuclear player.

Five decades later the nuclear anxieties which coloured Mr Gorton’s foreign policy outlook are creeping their way back into international relations. US President Donald Trump has announced that he will pull the US from the Nuclear Forces Treaty with Russia, as both countries expand their nuclear arsenals. India is locked in a nuclear tit-for-tat with neighbouring Pakistan, while China has developed nuclear weapons capable of reaching anywhere

in the US. Historically Australia has sought shelter under the US 'nuclear umbrella', but is it time for that to change? In a recent essay, Dr Stephan Fruhling, the Associate Dean of the College of Asia and the Pacific at the ANU, contemplated the "unthinkable option", and suggested that a nuclear-armed Australia is more likely than ever before.

**Fortress Australia:** According to Dr Fruhling, Australia's continuous coastline makes it uniquely positioned to 'spike the moat' with tactical, short-range nuclear weapons that could be used against air and maritime forces. "In air and naval battle on the high seas, nukes can now be employed without significant risk of collateral damage, much like conventional war heads," he told Late Night Live. "Australia could establish a maritime exclusion zone in wartime, to increase the military risk for any country planning a major attack against the continent."

**But What would be the Cost?** The strategic benefits of any nuclear capability would have to be balanced against the possible implications of breaking out of the US nuclear umbrella. Australia's access to US intelligence, technology, and weapons systems may be compromised if it chose to take on a defence strategy that was less reliant on the US. "Before investing in a nuclear program I think we would have to make a genuine attempt at trying to draw closer to the United States and its nuclear arsenal," Dr Fruhling said.

If Australia chooses to remain under the US nuclear umbrella, Indonesia presents a unique case in which American and Australian interests may not intersect. Indonesia is also a US ally, and if it decided to begin its own nuclear program, the implications for the US security guarantee for Australia are not clear. "Should Indonesia acquire nuclear weapons, relying on US deterrence against a nuclear attack would require a leap of

faith about the alignment of Australian and US interests," Dr Fruhling said.

An Australian nuclear program could lead to Indonesia following suit. "Indonesia has regional leadership ambitions, and a strong sense of independence and will, in coming years, tower over Australia economically as well as in population terms," Dr Fruhling said. "Australian acquisition of nuclear weapons would strengthen Indonesia's reasons to reciprocate, for status as well as security." In the meantime, however, Australia's non-nuclear status is important in discouraging Indonesia and other regional players from going down the nuclear path.

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**To Proliferate, or not to Proliferate?** During the Cold War America and Britain built their defence plans around nuclear weapons. Australia, stricken with paranoia, was prepared to play its role in the event of a nuclear war. Warplanes were built that could deliver nuclear

warheads to defend South-East Asia. Australia also backed Britain's nuclear-weapons program with uranium and test facilities at Maralinga, with devastating consequences for local Indigenous communities. "Australia saw itself as reinforcing the status and significance of its great nuclear-armed friends on which it depended on for its security," Dr Fruhling said.

After the Vietnam War, however, Australia dropped its nuclear ambitions as the great existential threat moved from an Asian communist invasion to a US–Soviet nuclear conflict. In the early 1970s Australia ratified the Nuclear Non-Proliferation Treaty, after refusing to become a signatory when it was first presented to the UN in 1968. In the latter decades of the 20th century Australia cemented its place under the US nuclear umbrella and centred its own defence strategy on a superior conventional capability at home.

Australia's nuclear strategy has remained relatively static over the past half century, advocating for disarmament while remaining close to the US and

its nuclear arsenal. The Federal Government's 2016 Defence White paper reiterated a familiar position. "Only the nuclear and conventional military capabilities of the United States can offer effective deterrence against the possibility of nuclear threats against Australia," it read. Last year more than 120 nations held talks to negotiate a treaty that would forbid states from developing or manufacturing nuclear weapons.

**The Australian Government refused to take part in the treaty negotiations, claiming they didn't consider the geopolitical realities the world was facing. For anti-nuclear organisations like the International Campaign to Abolish Nuclear Weapons, Australia has disregarded its humanitarian duties. "So long as the Australian Government stubbornly refuses to renounce nuclear weapons for our own security, it will have little luck convincing others to do so.**

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### ***Nukes on the Horizon?***

When the Gorton Government set out to build nuclear facilities at Jervis Bay in 1968, Cold War tensions were high, Britain was withdrawing from Asia, and Japan was beginning to take its place as a new economic power. From razor-sharp analysis of current events to the hottest debates in politics, science and culture, Late Night Live puts you in the big picture. A rapidly changing strategic environment has placed Australia at a similar foreign policy cross-road as China rises, the US retreats, and a series of flashpoints keep the world on edge. Ultimately, Dr Fruhling believes Australia should only consider nuclear weapons if there is a

**A rapidly changing strategic environment has placed Australia at a similar foreign policy cross-road as China rises, the US retreats, and a series of flashpoints keep the world on edge. Ultimately Australia should only consider nuclear weapons if there is a direct, existential threat to the country.**

direct, existential threat to the country. "I think we would have to genuinely feel under existential threat by a great power from Asia," he said. "A serious study would be the key to assessing whether nuclear weapons could really be a solution to our prospective security problems, rather than a distraction from them".

*Source: <https://www.abc.net.au>, 24 October 2018.*

### **OPINION – Richard A. Bitzinger**

#### **Does Japan Really Want to Go Nuclear?**

There has been a flurry of articles speculating that it might be a good thing for regional security if Japan became a nuclear power. Noted academic Walter Russell Mead argued in a Wall Street Journal article last month that an "American retreat from the Pacific" - caused by a vacillating Trump administration with a less-than-sterling security commitment to Asia - could lead Japan to conclude that "going nuclear" might be its best recourse. More recently, Singapore's Ambassador-at-Large Bilahari Kausikan wrote in the Washington Post that Japan and South Korea should both go nuclear, and that it was only a matter of when, not if.

Indeed, both writers believe that the Trump administration should welcome the idea of a nuclearised Asia. According to Mr Bilahari, it would create a "six-way balance of mutually assured destruction". And indeed, if the United States were to remove Japan from its security guarantee - covering it under the US nuclear umbrella - Tokyo might seriously consider becoming a nuclear power. Moreover, it is generally conceded that

Japan has the technological capacity to build an atomic bomb in a relatively short time - months, perhaps, a few years at the most. The real question, however, is, does Japan really want to be a nuclear power?

**Ok, You've Built "the Bomb" – Now What?:**

In the first place, Japan would likely find that becoming a nuclear weapons state is a lot harder than it or most others think. It is not simply a matter of building an atomic bomb. Yes, if Japan were to build a nuclear bomb and test it, it would have resonance throughout Asia, and, indeed, the rest

of the world. But it would require much, much more for Tokyo to create a credible nuclear deterrent. In the first place, Japan would need to test and re-test its nuclear capabilities. Yes, supercomputers can simulate some of the characteristics of a nuclear explosion, but ultimately Japan would probably have to conduct several nuclear tests, over the course of several years, to create a reliable nuclear force.

But how would it deploy such a weapon? On aircraft? Japan has no nuclear-capable aircraft, no bombers or specialised strike aircraft. The country's Air Self-Defence Force does operate several US-designed fighter jets, especially the F-15, which could conceivably be adapted to carry nuclear weapons. But that would require US permission to open up the plane's "black boxes" - its electronics and sources codes - in order to nuclearise these aircraft; it is hard to see that happening. Japan could put its nuclear weapons on missiles. That would require miniaturising a nuclear weapon to fit on a missile and then

developing the missile itself. Japan has a vibrant space-launch industry, but they are the wrong kind of rockets for a nuclear force. A specialised solid-fuelled missile would have to be built almost from scratch.

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**But Where?** Even then, where would Tokyo put these missiles, whether in silos (which would be vulnerable to earthquakes) or on mobile launchers? Japan is a small and populous country; what region of Japan would want to accept these weapons, especially since they would make such a place a high-value target for an enemy's

first strike? It is likely that many local communities would copy Okinawa in strongly protesting against the militarisation of their back yards. Japan could deploy these missiles on submarines, which would require a specialised submarine-launched missile, encapsulated for underwater launch. It

**Japan could deploy these missiles on submarines, which would require a specialised submarine-launched missile, encapsulated for underwater launch. It would also have to develop a whole new submarine, most likely nuclear-powered (SSBN) - meaning another technological hurdle (small, extremely safe nuclear reactors) that needs to be overcome.**

would also have to develop a whole new submarine, most likely nuclear-powered (SSBN) - meaning another technological hurdle (small, extremely safe nuclear reactors) that needs to be overcome. All this will not be cheap. It cost Britain £15 billion (\$27 billion) to create a four-boat fleet of Vanguard-class SSBNs - and London simply bought

submarine-launched Trident II missiles off the shelf from the US (something Washington would likely not do for Tokyo).

**More Than Missiles:** At the same time, Japan would have to build a whole supporting infrastructure for its nuclear weapons. Specialised, extremely secure storage facilities would have to be built at airbases and naval stations to secure nuclear weapons. Nuclear

engineers would have to be trained to maintain and handle these bombs and warheads. Moreover, Japan would have to come up with an early warning system (satellites and radar) to detect an incoming nuclear attack, as well as a specialised and highly secure command and control system for the use of nuclear forces. In addition, security devices, called PALs, would have to be fitted to each weapon to prevent the unauthorised arming or detonation of a nuclear device; such PALs would have to be highly encrypted to prevent their being hacked.

Tokyo would then have to devise protocols for arming and using its nuclear forces. Most likely the prime minister would control the nuclear “football” containing the launch codes, and he or she would be the final authority for the actual release of nuclear weapons. But what about submarine-launched nuclear forces? Even with the “two-man rule”, submarine commanders on SSBNs theoretically have considerable autonomy to launch on their own authority. Such details would have to be worked out.

***You're On Your Own, Japan:***

Above all, Tokyo would need to tackle all of these technological and infrastructure issues on its own. The US certainly is not going to help. It would cost trillions of yen to build a credible nuclear force, and decades to put it into place. But what about the vast majority of Japan's population that is still squeamish about the idea of going nuclear? Japan's citizens have had anti-militarist, anti-war and anti-nuclear beliefs drummed into them over the past 70 years. These convictions are enshrined in Article 9 of its Constitution, which renounces war as a tool of international disputes. Yes, this article has been constantly reinterpreted over the decades to permit the re-arming of Japan, sending Japanese forces overseas, and engaging in collective security with the US. Nevertheless, Article 9 is still construed as prohibiting offensive

weapons, particularly nuclear forces.

Moreover, when it comes to nuclear weapons, Japan is a special singular victim, the only country to have ever been attacked with atomic bombs. These are difficult sentiments to overcome on the road to “going nuclear”. A nuclear Japan is not unimaginable. At the same time, it is not a thing that could be done on the cheap, in a hurry, or without provoking a massive political tempest.

*Source: <https://www.straitstimes.com>, 19 October 2018.*

**OPINION – Sandip Kumar Mishra**

**Denuclearising the Korean Peninsula: Hope Amidst Uncertainty?**

In his mid-September visit to Pyongyang this year, South Korean President Moon Jae-in reportedly had several fruitful exchanges with North Korean leader, Kim Jong-un, culminating in the signing of the Pyongyang Joint Declaration. Both agreed to open permanent family reunion facilities in the short-term, work to reconnect cross-border rail and road links within this year, restart joint projects at Kaesong and Most Kumgang, and Kim's visit to Seoul in 2018.

A military deal was signed between the South Korean Defence Minister Song Young-moo and North Korean First Vice Minister of the Ministry of the People's Armed Forces No Kwang-chol. In this regard, they agreed to stop field training exercises and artillery drills in the border areas, and create buffer zones along the land and sea borders. They also decided to withdraw guard costs in the Demilitarised Zone completely. Both countries will pull out soldiers and military resources from 11 closely located posts in the border area by the end of this year. There are also an agreement about the joint excavation of the remains of Korean soldiers who died in the DMZ

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area during the Korean War, and creating a trilateral committee with the UN Command to demilitarise the Joint Security Area (JSA) at Panmunjom.

North Korea agreed to shut down its nuclear facilities at Yongbyon, work to make the Korean Peninsula nuclear weapons-free, and permanently shut down the Dongchang-ri missile engine test site. However, on these issues, North Korea has sought the US' reciprocity. Further, there has been no announcement about the timeline or sequencing of the denuclearisation process. This means that Moon Jae-in was not able to achieve anything substantial on nuclear and missile issues, and resolution on the matter remains pending and subject to the US and North Korea.

The overall conclusion is that Moon Jae-in narrowly focused on inter-Korea peace-building and left North Korea denuclearisation to the US. However, his visit was followed renewed US-North Korea engagement that began with the US Secretary of State Mike Pompeo's visit to Pyongyang on 7 October. Pompeo has stated that "significant progress" was been made during his talks with Kim Jong-un and that the US and North Korea were "pretty close" to agreeing on the details of a second summit between Donald Trump and Kim Jong-un. There have since been reports that North Korea has agreed to open its nuclear test site, Punggye-ri as well missile engine site, Dongchang-ri to international inspectors. While this may not appear to be 'significant progress' to critics, it is important to underline that Pompeo was not even able to meet Kim during his last visit, and further

estrangement between the US and North Korea was assumed. Developments seem to back on the right track, and Moon's role in making it happen must not be overlooked or underplayed.

It is now incumbent on the US and North Korea to chart out the future course of denuclearisation in a way that is sensitive to each others' expectations

and limitations. Whereas the US would like to achieve some verifiable, concrete success first before easing out sanctions on North Korea, Pyongyang will demand simultaneous reciprocity. North Korean Foreign Minister Ri Yong-ho made this clear in his speech at the UN General Assembly on 29 September 2018, in which he

emphasised 'trust' and 'peace' to move forward. Ri Yong-ho asked the US to first make some concessions to convince North Korea or its sincerity, and before they could begin denuclearising. He said, "...without any trust in

the United States, there will be no confidence in our national security, and under such circumstances there is no way we will unilaterally disarm ourselves first." In the evening of the day of Ri's speech, Trump said that after having exchanged letters with Kim, they had both fallen in "love" with each other. President Moon in fact made a very strategic visit to New York - to participate in the UNGA

meeting, as well as to update Donald Trump about his recent trip to North Korea. Moon has been insisting that a peace treaty with North Korea must be concluded along with the re-initiation of various exchanges between the two Koreas, and delinking these processes from the process of denuclearisation.

Although that the US ostensibly seems to be following up on Moon's efforts, there is a slowly

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**Although that the US ostensibly seems to be following up on Moon's efforts, there is a slowly emerging gap between Washington and Seoul about the speed and conditionality of engagement with Pyongyang. On 11 October, Trump sent a clear message to South Korea that it should not unilaterally lift sanctions imposed on North Korea - he said, "they (South Korea) do not do anything without our approval."**

emerging gap between Washington and Seoul about the speed and conditionality of engagement with Pyongyang. On 11 October, Trump sent a clear message to South Korea that it should not unilaterally lift sanctions imposed on North Korea - he said, "they (South Korea) do not do anything without our approval." That it is a time for cautious hope regarding developments on the Korean peninsula is clear. However, the US, South Korea and North Korea are all trying to move forward as per their own strategies, and there is still insufficient trust between these stakeholders. Amidst these uncertainties, the second Trump-Kim summit meet, tentatively scheduled after the US midterm election in November, will be an important milestone.

Source: <http://www.ipcs.org>, 17 October 2018.

**OPINION – Simon Tisdall**

**Trump is Creating a Nuclear Threat Worse than the Cold War**

Donald Trump's impulsive decision to rubbish a landmark arms control treaty and develop a new generation of American nuclear weapons deals another devastating, dangerous blow to the rules-based global order. It seems Trump only has to look at an international treaty or a multilateral institution, and he is overcome by an irresistible urge to tear it down. The man is a menace, that much is true. This latest piece of wilful vandalism will put everyone at greater risk. It's terrible news for all who seek a nuclear-free world. It's a significant backwards step away from the obligation of all declared nuclear weapons states, under the 1970 nonproliferation treaty, to reduce and eliminate their arsenals. It's a reckless, irresponsible act.

But that's not the worst of it. Trump's decision, if implemented, fires a starting gun in a second-phase global arms race that could be even more frightening than the two-sided superpower

contest that halted when the Soviet Union imploded. The world has changed since 1991. This time around, the race could be many dimensional and multipolar, making it harder to contain. This time, the threat of mutual annihilation will be replaced by multilateral assured destruction. It's possible Trump's announcement could be a ploy, intended to pressure the Russians in a week when John Bolton, his national security adviser, is holding talks in Moscow. It would be typical of this president to threaten Armageddon only to make nice later, as he did with North Korea. Trouble is, Vladimir Putin is no weak, marginalised actor, like Kim Jong-un. The Kremlin has vowed to match new US weapons, warhead for warhead.

Specifically, Trump justifies his decision by saying Russia's deployment of new, mobile, medium-range, land-based, nuclear-capable cruise missiles breaches the 1987 INF treaty. It's not a new problem; Barack Obama wrestled with it. And

the west knows, to its cost, that Putin is in offensive mode on a range of fronts. In March, he ostentatiously displayed Russia's modernised arms chest, unveiling a 15-warhead long-range missile, wizard underwater drones and a hypersonic missile called the "dagger" that could, he said, strike like a meteorite.

Such juvenile bragging aside, Russia maintains –

with some justice – that it is the Americans who have undermined the INF pact by spending billions of dollars on upgrading existing nuclear weapons systems and making them more "usable" by lowering their explosive yields. Fundamentally threatening, from Moscow's perspective, was George W Bush's unilateral decision in 2002 to quit the 30-year-old ABM treaty, another cold war arms-control building block. Russia says the subsequent US deployment of antimissile defences – the current Nato-run "missile shield" is based in Poland and Romania – tipped the European balance of forces against Moscow.

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Trump's INF decision also reflects American concern, shared by the Russians, about China – which is not bound by the agreement, and is developing medium-range systems. A possible future threat to Russia's far east is another reason why Putin believes he needs the mobile, land-launched missiles. Given rising military confrontation between American, Chinese and other nations' forces in the South China Sea, and Beijing's aggressive stance towards Taiwan, it is not hard to see why generals on all sides, mired in old, cold-war thinking, take a similar

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view. Minor-league nuclear-armed states, such as the UK and France, cannot escape a share of blame for this across-the-board deterioration in nuclear security. London and Paris can barely afford their nukes, financially or morally. They are less an "independent deterrent", more a forlorn symbol of forfeited great power status. Both governments should set an example to unmonitored nuclear states such as Israel, Pakistan and India, and others who may in future seek to "go nuclear", by unilaterally disarming. But even Jeremy Corbyn, a lifelong anti-nuclear campaigner, cannot bring himself to promise that, lest it derail his political ambitions.

**Alternatively, there could be major new deployments of US air- and sea-launched missiles, plus renewed pressure on Nato countries to put more cash in the kitty. The trashing of the INF treaty could also kill off an arguably even more important pact, the New Start strategic weapons reduction treaty, negotiated by Obama in 2010, whose renewal in 2021 is already far from certain. In short, the knock-on effects of Trump's act of gross irresponsibility are globally destabilising, unpredictable and wildly risky. They point to a world for ever ruled by fear of nuclear destruction. But then, fear is how Trump works.**

All of which brings us back to Trump, and the breathtaking hypocrisy of a man who last year threatened to "completely destroy" North Korea because it had the temerity to build atomic

bombs. Trump insists Kim must disarm totally – even as he plans to expand the US nuclear arsenal.

Has the White House considered how this may affect Pyongyang's willingness to talk peace? Trump's double standard also extends to Iran – ironically, the only country that has kept its nuclear word. Tehran faces extreme US sanctions despite its scrupulous adherence to the multilateral 2015 nuclear deal that Trump jettisoned earlier this year. Iran's leaders will look at this latest exercise in treaty-busting and say America, once again, has shown that its solemn word cannot be

trusted. Hardliners will argue it proves the case for an Iranian bomb.

If Trump goes ahead, and the Kremlin responds in kind, it could mean the return to Europe after 30 years of US land-based missiles, dread offspring of the cruise and Pershing missiles whose deployment in the 1980s was resisted by CND and the Greenham Common women's peace camp. Alternatively, there could be major new deployments of US air- and sea-launched missiles, plus renewed pressure on Nato countries to put more cash in the kitty. The trashing of the INF treaty could also kill off an arguably even more important pact, the New Start strategic weapons reduction treaty, negotiated by Obama in 2010, whose renewal in 2021 is already far from certain. In short, the knock-on effects of Trump's act of gross irresponsibility are globally destabilising, unpredictable and wildly risky. They

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Source: <https://www.theguardian.com>, 23 October 2018.

OPINION – Jonathan Tirone

Nuclear Weapons

Half a century after world powers agreed to thwart the spread of nuclear weapons and reduce their own arsenals, both those projects are under strain. Under the 1968 Non-Proliferation Treaty, only five nations — China, France, Russia, the U.K. and U.S. — can possess nuclear arms, and all have promised to reduce their stockpiles eventually to zero. But Israel, India and Pakistan all developed the bomb after the treaty emerged. More recently, the goal of curbing atomic arms has been challenged by North Korea's entry into the nuclear club, by the U.S. withdrawal from an international deal curbing Iran's nuclear program, and by threats by the leaders of the U.S. and Russia to augment their arsenals rather than continue to pare them down.

**The Situation:** U.S. President Donald Trump said in October that he planned to pull the U.S. out of a landmark 1987 treaty with Russia that rolled back ground-launched intermediate-range missiles in and aimed at Western Europe. The U.S. says Russia's recently developed 9M729 missile falls within the range covered by the pact, which NATO agrees has been violated, a charge Russia denies. Termination of the agreement could revive the nuclear arms race in Europe. It could also spur one in Asia, as it would free the U.S. to deploy mid-range nuclear weapons to counter China's deployment of such arms, which is not bound by the 1987 treaty. Trump has said that in general the U.S. "must greatly strengthen and expand its nuclear capability." Russian President Vladimir

Putin has boasted of his country's work on next-generation nuclear-weapons systems.

Under Trump, the U.S. has already withdrawn from a 2015 accord setting limits on Iran's nuclear program and has begun re-imposing sanctions that were lifted under the deal. Iran's government has said it would continue to abide by the pact. The risk, though, is that as U.S. sanctions bite, hardliners in Iran will insist on re-accelerating the nuclear program. Before the deal, Iran possessed enough enriched uranium for multiple bombs and was thought to be capable of refining it to the level needed for weapons in just a few months. North Korea declared its nuclear force "complete" in late 2017. Dictator Kim Jong Un said this year that he's open to giving up his nuclear weapons. It's not clear what his conditions are. And many analysts are

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skeptical he'd ever relinquish the arms, for fear of losing his means of deterring a military intervention meant to topple him.

**The Background:** The U.S. was the first to develop nuclear weapons and is the only country to have used them. It dropped atomic bombs on the Japanese cities of Hiroshima and Nagasaki in August 1945, hastening an end to World War II but at the cost of an estimated 300,000 lives. Within two decades, the Soviet Union, the U.K., France and China had their own arsenals. In the Nonproliferation Treaty, those powers and the U.S. promised to share nuclear technology for civilian purposes – energy generation and medical applications – with countries that foreswore nuclear arms. Today, 191 countries are treaty members. The IAEA monitors the arrangement and accounts for global inventories of nuclear material that could be diverted for bombs. The nuclear-armed countries outside of these agreements — India, Israel, Pakistan and North Korea — are subject to trade restrictions

and in some cases, sanctions. The U.S., Soviet Union and then Russia, U.K. and France have all reduced their nuclear arsenals, decreasing the total number of warheads from a Cold War peak of 70,000 to about 15,000 today.

**The Argument:** Arms-control advocates worry that any growth in the arsenals of the U.S. or Russia will make it blatantly clear that nuclear-armed states have no intention of giving up their weapons, undermining non-proliferation efforts. Other analysts say those efforts are largely futile anyway. They note that creating the bomb isn't the technological feat it once was; many nations now possess the fissile materials and cadre of engineers to pull it off. And the penalties used to dissuade countries from going nuclear have lost much of their potency because of inconsistent application. While Pakistan and North Korea remain stigmatized, India and Israel have won waivers of restrictions on trade and military sales. At the same time, nuclear weapons may be declining in appeal as more countries look to emerging technologies for defense. Systems using artificial intelligence, robotics and bioengineering are on the sharp edge of a new generation of weapons, which may eventually require their own non-proliferation rules.

Source: <https://www.bloomberg.com/quicktake/nuclear-weapons>, 24 October 2018.

**OPINION – Independent, Editorial**

**Trump could Revive the Cold War, but China has the Power to Change the dynamics of it**

Over the past few days the shape of what many in Europe and the United States call a new Cold War has begun to emerge — with threats and nuclear weapons that resemble the old one, punctuated by new dynamics, in part because of the rise of a rich, expanding and Nationalist China. The change was evident as President Donald Trump explained his decision to abandon a 31-

year-old arms-control treaty with Russia — hinting he was ready to plunge into a new arms race with both Moscow and Beijing, and as the Justice Department filed charges, for the third time this year, against Russians accused of interfering in U.S. elections.

Past attempts to embarrass President Vladimir Putin into changing his behaviour, in both the nuclear and cyber-conflict arenas, have failed. During the Obama administration, the exposure of Russia's violations of the Intermediate-range Nuclear Forces Treaty in 2014 did nothing to alter Moscow's arms buildup. Nor did the decision to name Putin as the man behind the 2016 attack on

the Democratic National Committee and the widespread use of social media to widen fissures in U.S. politics. There is little evidence that the indictment of the Internet Research Agency and members of Putin's military

intelligence have deterred the Russians. But in both cases China is also lurking in the background, a powerful force in a way it never was in the first Cold War, which began just as Mao declared the creation of the People's Republic. And while China appears to be the reason for Trump's decision to pull out of the missile treaty with Russia, it is causing new anxieties in a Europe already mistrustful of Trump's "America First" foreign and trade policies.

Trump argued correctly that the arms treaty, signed in 1987 by Ronald Reagan and Mikhail S. Gorbachev, left China free to build up its own nuclear and conventional missiles of all ranges. (China was never part of the negotiations, and never a signatory to the treaty.) And perhaps as part of his effort to deflect discussion of whether Russia succeeded in manipulating the 2016 election, Trump and Vice President Mike Pence have accused China of meddling, too — seeking to shape American public opinion more through investment, trade and theft of intellectual property than covert cyber-manipulation.

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The Trump administration identifies both Russia and China as “revisionist powers” and “strategic competitors” of the United States. But when it comes to countering their nuclear advances and their increasingly innovative use of cyber-conflict to outmanoeuvre their adversaries, Trump’s long-term strategy remains a mystery — beyond promises to match every military buildup, and strike back hard.

Whether it was real or a negotiating ploy, Trump’s declaration that he was ready, if necessary, to plunge the world back into a 1950’s-style arms race is bound to cause yet another rift between Washington and its European allies — exactly the kind of fracture inside NATO that Putin has tried to create. And in cybersecurity, Trump has veered from denying Russian activity to authorizing the newly created U.S. Cyber Command more latitude to conduct pre-emptive strikes without presidential authorization. That raises fears of escalation with no clear reason to believe that the United States, its sprawling networks still vulnerable, would come out on top. The Europeans do not deny that Russia has violated the INF treaty, which Kevin Ryan, an expert on Russian arms at the Belfer Center at Harvard, noted recently was “negotiated at a time that was equally, if not more, contentious.” At the time, hundreds of thousands of Europeans demonstrated against the deployment of U.S. Pershing II intermediate-range missiles on their soil as a counterbalance to Soviet SS-20s. That deployment led to the INF treaty Trump now wants to dump.

Most European leaders — especially the Germans — believe other weapons systems deter the Russians, including air- and ground-launched missiles. For them, Trump’s decision to abandon one of the few remaining treaties controlling nuclear weapons fits a narrative of “America

First” at the expense of existing, long-term alliances, like NATO — and is the latest in a series of abandoned agreements, from the Paris accord on climate to the Iranian nuclear deal. In this case, they see few advantages from leaving the treaty. Carl Bildt, a former Swedish prime minister, called the move “a gift to Russia that exposes Europe to a growing nuclear threat,” because as the United States enters an arms race, “Russia can quickly deploy new weapons in numbers.”

But the European reaction has been disorganized. While NATO countries have put more troops in Baltic nations and Poland, and are preparing a huge military exercise in the North Atlantic, there is no agreed-on strategy over what red lines should be set to respond to Russian activity. Nowhere is that clearer than in the realm of cyberwarfare, where Europeans are spending more money on collective defense, but NATO has no offensive capability and no agreement about what kind of interference by the Russians calls for a response.

For his part, Putin has calibrated his actions with care. He denies that the Russian deployment of what the West calls an SSC-8 missile violates the treaty. And he has accused the United States — long before Trump was elected — of violating the treaty itself, arguing that anti-missile batteries it has placed in Europe could be used to fire other missiles that violate the ban on weapons that can reach 300 to 3,500 miles. If the breach with Russia opens, it will most likely rekindle the Europeans’ fear that their territory would be the battlefield for the superpowers. But missile treaties are not like NAFTA, the trade agreement Trump criticised and then renegotiated with Mexico and Canada.

Putin has little incentive to negotiate a new INF treaty; his intermediate-range missiles fit a strategy of disruption. The Chinese have even less incentive to join any talks: Most of their missiles,

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nuclear and non-nuclear, fall within the range of weapons prohibited by the treaty. They would be giving up one of their primary tools for keeping the United States at a distance in the Pacific. And the Americans, the Chinese point out, have missiles of the same range at sea and on aircraft, which are permitted by the treaty. Trump's strategy is even harder to discern in the cyberattacks. While the Justice Department has indicted Russians working for the Internet Research Agency, officers of the intelligence organisation formerly known as the GRU, and now an "accountant" charged with aiding influence campaigns with millions of dollars, none is known to be in custody. (The United States will not describe the whereabouts of the accountant.)

The newly elevated U.S. Cyber Command has put together a team to counter election interference, but said little about its tactics. Fighting disinformation is especially hard: Cyber-command officials say they are far more comfortable turning off Iranian centrifuges or sabotaging North Korean missiles than they are waging counter-information wars. While Trump can build missiles to match the Chinese or Russian arsenals, there is no simple way to match Russian or Chinese influence operations. For the Trump administration, it is like the early 1950s all over again, said one of the president's top advisers, as a new threat emerged and Washington argued over how, or if, to counter it. But this time Washington does not seem to be consulting its allies.

Source: <https://www.independent.co.uk>, 24 October 2018.

NUCLEAR STRATEGY

CHINA

**China will build More Nuclear Weapons for Stronger Deterrence**

China has a policy of striking back with nuclear weapons if they are hit first. Chinese experts have started to worry that this second-strike credibility is eroding. They believe China needs more and better nuclear weapons to show that it could still strike back if attacked.

US construction of missile defense and improving conventional precision strike weapons will require China boost nuclear capability. China has about 280 nuclear weapons and 4 nuclear missile submarines. Four nuclear submarines are needed to

keep one nuclear submarine at sea at all times.

If China expands to eight nuclear submarines, then this could mean about 48 more nuclear missiles.

China already has four Type 094 nuclear missile submarines and is expected to build a fifth. The Type 096 is a projected class of SSBN for China's People's Liberation Army Navy Submarine Force. The submarine is expected to begin construction in the early 2020's and be armed with the JL-3 SLBM. US conventional weapons are good enough to endanger Chinese nuclear weapons,

if the US struck first.

Source: Brian Wang, <https://www.nextbigfuture.com>, 25 October 2018.

**Putin has little incentive to negotiate a new INF treaty; his intermediate-range missiles fit a strategy of disruption. The Chinese have even less incentive to join any talks: Most of their missiles, nuclear and non-nuclear, fall within the range of weapons prohibited by the treaty. They would be giving up one of their primary tools for keeping the United States at a distance in the Pacific. And the Americans, the Chinese point out, have missiles of the same range at sea and on aircraft, which are permitted by the treaty.**

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**USA**

**US will Increase Nuclear Arsenal if Others do not 'Come to their Senses': Trump**

Donald Trump has warned that the United States will increase its nuclear arsenal until other nations “come to their senses”, days after he said the US would pull out of a Cold war era arms control treaty with Russia. Trump has confirmed that he would withdraw the US from the INF treaty with Russia that limited the number of missiles in the two nations, accusing Moscow of violating the deal.

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The treaty was one of those agreements and is set to expire in the next two years. The 1987 pact helps protect the security of the US and its allies in Europe and the Far East. “We will build it (nuclear arsenal) up. Until people come to their senses – Russia has not adhered to the agreement. “Until people come to their senses – we have more money than anybody else by far, we’ll build it up until they come to their senses,” Trump told reporters at the White House. The US now wants to leave the INF. “I’m terminating the agreement because they violated the agreement. I’m terminating the agreement,” he said.

“When they do, then we’ll all stop. We will not only stop, we’ll reduce, which I would love to do. But right now, they have not adhered to the agreement,” Trump said.

Reiterating that Russia had violated the treaty, he said, “They have not adhered to the spirit of that agreement or to the agreement itself, Russia – China’s not as good at the agreement, they should be. But until they get smart, there’s nobody that’s going to be even close to us.” “It’s a threat to whoever you want, and it includes China, and it includes Russia and it

includes anybody else that wants to play that game. You can’t do that. You can’t play that game on me,” Trump asserted. Russia has denied it is in violation of the treaty. Senator Jim Risch supported the move toward withdrawal from the INF treaty.

“At a time when the United States and the Soviet Union were the only global superpowers, the INF Treaty was a landmark agreement that helped provide stability and security in Europe,” he said. The INF treaty was signed between the then US president Ronald Reagan

and his USSR counterpart Mikhail Gorbachev in 1987 on the elimination of intermediate-range and shorter-range missiles. ...

Source: <https://www.outlookindia.com>, 23 October 2018.

**BALLISTIC MISSILE DEFENCE**

**UKRAINE**

**Ukraine’s New Tactical Ballistic Missile System**

A Ukrainian company confirmed that it has had some success in development of the new Grom-2 tactical ballistic missile system. The Grom-2, developed by Yuzhnoye State Design Office company, will have several different conventional warheads, including cluster and high-explosive. The mobile short-range tactical ballistic missile system is

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equipped with two short-range ballistic missiles. It is a solid-propellant missile that has a maximum range 280 km and minimal 50 km.

The Grom-2 was designed to overcome air defense systems. A missile can follow an aeroballistic path at altitudes from 11 to 50 km, performing evasive maneuvers in the terminal phase of flight to

penetrate missile defense systems. This new tactical missile system will have a new guidance system with a self-contained inertial navigation complex and optical seeker that enables it to hit targets in day and night with a high level of accuracy. It additionally has a target accuracy of 5m to 15m and operates even in fog or low visibility.

The transporter-erector-launcher (TEL) vehicle based on the newly-developed 10x10 chassis carries two tactical ballistic missiles. The TEL is powered by a Deutz diesel engine with a power output of 600 hp. The full missile system also includes the command vehicle, the information preparation vehicle, maintenance and repair vehicle and the life support vehicle. The basic version of the missile will carry payload capacity of up to 480 kg of conventional warheads or 54 combat submunitions of 7.5 kg each, according to defence-blog.com. The first test launch of the new tactical missile is scheduled for the second half of 2019.

Source: <https://i-hls.com/archives/86262>, 23 October 2018.

## USA

### Lockheed's Ballistic Missile Defense System Clears Another Hurdle

Lockheed Martin Corp. confirms that it had reached a key technical milestone with a new missile defense system. The company's Long Range Discrimination Radar, known as LRDR, completed what's called a closed-loop satellite track — successfully searching for, acquiring and tracking numerous satellites across their entire field of view and processing the data using its tactical software and back-end signal processing equipment.

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What that means is that Bethesda-based Lockheed (NYSE: LMT), the world's largest defense contractor, has designed and produced a scaled LRDR system that is running with the actual processing equipment and software (featuring more than 3 million lines of code). This means the system is ready to proceed to full-rate manufacturing and is on schedule to deliver on time, LRDR Program Director Chandra Marshall said in a statement.

The company will deliver its final software build to the Missile Defense Agency (MDA) at the end of October. Today's news means Lockheed is ready to proceed to full-rate manufacturing. The LRDR system is the backbone of the Missile Defense Agency's work protecting the U.S. from a ballistic missile attack and the centerpiece of a \$784 million contract the company won in October 2015. The radar is designed to use precise tracking data to identify ballistic missile threats early in flight and discriminate lethal payloads from decoys and other objects.

**Lockheed's mission system and training work, part of the company's \$14.2 billion rotary and mission systems business, has more than four decades of experience working on solid-state radar and ballistic missile defense. LRDR builds on the weapons and technologies that Lockheed provides for all three segments of the MDA's layered Ballistic Missile Defense System being developed. That includes the Patriot Advanced Capability-3 (PAC-3) missiles and the THAAD system.**

The LRDR prototype is located in Moorestown, New Jersey, and will be moved next year to its final destination at Clear Air Force Station in Alaska. The LRDR is an S-band, ground-based radar that uses high-frequency microwaves to identify ballistic missile threats. It uses Gallium Nitride (GaN) circuits transmit a powerful radar signal and detect incoming threats at a long distance.

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ballistic missile defense. LRDR builds on the weapons and technologies that Lockheed provides for all three segments of the MDA's layered Ballistic Missile Defense System being developed. That includes the Patriot Advanced Capability-3 (PAC-3) missiles and the THAAD system.

Lockheed develops and operates the command-and-control network for all the sensors and weapons in the U.S. Ballistic Missile Defense System, as well as the new interceptor guidance system for the ground-based interceptors that will engage any incoming threat to the U.S. Those threats are considered to be on the rise thanks to technological advances by Russia, China and North Korea and the waves of heightened geopolitical tensions seen around the globe. Final system delivery is planned for 2020.

Source: <https://www.bizjournals.com>, 17 October 2018.

## **NUCLEAR ENERGY**

### **GENERAL**

#### **Global Nuclear Power Capacity Expected to Reach 536GW by 2030**

Nuclear technology is a major base-load power-generating source and accounted for 10.5% of global power generation in 2017 as per GlobalData, a leading data and analytics company.

The nuclear power sector is growing in many countries as demand for electricity increases. The company's latest report 'Nuclear Power – Thematic Report' reveals that some 31 countries are currently operating nuclear reactors for their electricity generation. Countries with significant nuclear power capacity are the US, France, Japan, China, Russia, South Korea, Canada, and Ukraine,

with more than ten GW installed capacity each. Germany, the UK, Sweden, India, Spain, Belgium, and Taiwan have five to ten GW installed nuclear power capacity each.

The global cumulative installed nuclear power capacity in 2010 was 376GW, of which more than 100GW was in the US alone. In 2011, this reduced

slightly in the aftermath of the Fukushima disaster as a few reactors in Japan were permanently shut down. Several reactors in Germany were also shut down in the same year as part of the initial steps by the country to phase out nuclear power. During the period 2012–2017, the total cumulative installed capacity increased by about 18GW to 392 GW despite a few plants having been shut down around the world, thanks to new additions in China exceeding 30GW.

... It is expected that the cumulative installed capacity for nuclear power will grow at a compound annual growth rate (CAGR) of 2.4% during the period 2017-2030 to reach 536GW by 2030. The number of nuclear power installations is also expected to increase during the forecast period.

The top 10 nuclear power generating countries accounted for around 84% of the world's total cumulative installed nuclear power capacity in 2017. The US and France are the leading nuclear power markets, with shares of around 30.2% and 19.0%, respectively, of the world's cumulative installed nuclear power capacity.

Some countries that currently have little to no nuclear power capacity look at the technology as a viable option to increase their energy independence and the diversity of their energy portfolio. Turkey, the UAE, Egypt, Saudi Arabia, Vietnam, and Poland currently

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have no nuclear power capacity but have upcoming capacity in different stages of completion.

A number of major M&A deals occurred during the period 2015–2018. Notably, Brookfield Business Partners, a business services and industrials company, completed the acquisition of Westinghouse, a leading nuclear energy company and a subsidiary of Toshiba. The completion of this acquisition indicates an important milestone for Westinghouse as it successfully surfaced from Chapter 11 bankruptcy.

In January 2018, China's two major nuclear power companies – China Nuclear Engineering & Construction Corporation, a provider of nuclear-related construction and engineering services, and China National Nuclear Corp, a state-owned nuclear technology company – were involved in a merger, as the country is continuing with the consolidation of its state-owned enterprises to decrease overcapacity and enhance operating efficiency. Advanced technologies are expected to drive the future of the nuclear power market. The technologies that will benefit those nuclear reactors that are expected to be commissioned in the near future are Generation IV reactors, EPRs, and SMRs.

Source: <https://www.power-technology.com>, 23 October 2018.

**INDIA**

**Russia's Rosatom Ships out Equipment for Kudankulam Nuclear Power Project**

Rosatom, the Russian atomic energy corporation, said its machine building division Atomenergomash has shipped out equipment for Unit 4 of the KNPP. In a statement issued here, Rosatom said the equipment includes moisture

**Rosatom, the Russian atomic energy corporation, said its machine building division Atomenergomash has shipped out equipment for Unit 4 of the KNPP. In a statement issued here, Rosatom said the equipment includes moisture separator reheaters. In total, there will be four sets of moisture separator reheaters, two sets have already been shipped.**

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Moisture Separator Reheaters, manufactured by ZiO-Podolsk, a subsidiary of Atomenergomash, are designed to remove water condensed from the process stream to maximise thermal

efficiency and reliability of the low-pressure turbine. The weight of the separators is 47 tonnes; their height is around six metres and diameter is four metres. Product lifetime is 30 years. Indian atomic power plant operator NPCIL has two 1,000 MW nuclear power plants at KNPP built with Russian equipment. Two more units were being set up at Kudankulam. Meanwhile, the first two units are shut down for maintenance work.

Source: <http://www.newindianexpress.com>, 20 October 2018.

**NUCLEAR COOPERATION**

**CHINA-BELGIUM**

**Belgium, China to Cooperate in Nuclear Energy**

Li said the two countries could boost cooperation in technology and innovation and expand nuclear cooperation on the basis of abiding by international laws and meeting international obligations," China's Ministry of Foreign Affairs said in a statement. "The two countries can deepen practical cooperation in infrastructure development and the digital economy while actively exploring third-party market cooperation." Li said China will continue to develop clean energy, for which nuclear energy is an important pillar.

**Mainland China has about 45 nuclear power reactors in operation, about 15 under construction, and more set to start construction. The government's long-term target, as outlined in its Energy Development Strategy Action Plan 2014-2020, is for 58 GWe of nuclear generating capacity by 2020, with 30 GWe more under construction.**

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government's long-term target, as outlined in its Energy Development Strategy Action Plan 2014-2020, is for 58 GWe of nuclear generating capacity by 2020, with 30 GWe more under construction. Belgium has seven reactors generating about half of its electricity. However, the country currently plans to shut down its seven operating nuclear reactors by 2025.

Source: <http://www.world-nuclear-news.org>, 18 October 2018.

**The science should mandate a moratorium in rich countries on any further expansion of the fossil fuel industry, or any infrastructure dependent on it. Currently, global demand for coal, oil and gas are all growing, with fossil fuels accounting for 81% of energy use. Worryingly, the International Energy Agency projects total fossil fuel use rising for decades still to come, smashing all climate targets. A moratorium could take the form of a fossil fuel non-proliferation treaty.**

## NUCLEAR PROLIFERATION

### UK

#### **We Need a Fossil Fuel Non-proliferation Treaty – and We Need it Now**

How did government respond to the recent scientific conclusion that only “rapid, far-reaching and unprecedented changes in all aspects of society” can deliver the globally agreed target for stopping climate breakdown? In the UK, fracking for fossil fuels was given the green light, plans were announced for a huge new road in the south-east, incentives for electric vehicles withered, the expansion of Heathrow airport is still going ahead and Gatwick airport is trying to expand too by bringing a back-up runway into use. It's like seeing a sign that says “Danger: vertical cliff drop” and pulling on your best running shoes to take a flying leap.

Something isn't working. The head of the oil company Shell responded to the new climate

science warming by clarifying that “Shell's core business is, and will be for the foreseeable future, very much in oil and gas.” BP announced new North Sea oil projects. Immediate choices are being made with blank disregard to avoiding climate breakdown. A new line in the sand is needed to underpin the existing climate agreement, to exert influence over the immediate choices of

policymakers. At the very least, the science should mandate a moratorium in rich countries on any further expansion of the fossil fuel industry, or any infrastructure dependent on it. Currently, global demand for coal, oil and gas are all growing, with fossil fuels accounting for 81% of energy use.

Worryingly, the International Energy Agency projects total fossil fuel use rising for decades still to come, smashing all climate targets. A moratorium could take the form of a fossil fuel non-proliferation treaty.

The threat of nuclear catastrophe provides a precedent for how, quickly, to stop a bad situation getting worse. The NPT, agreed 50 years ago between 1965-68, was a triumph of rapid diplomacy,

at the height of cold war mistrust, and against an immense security threat (this is a different, far more comprehensive and important treaty than the one with Russia rejected by Donald Trump).

We could even adapt the classic “three pillar” structure of the NPT. The first is “non proliferation” itself. Climate negotiations and national commitments are not moving fast enough

**We could even adapt the classic “three pillar” structure of the NPT. The first is “non proliferation” itself. Climate negotiations and national commitments are not moving fast enough to meet the older 2C climate target let alone 1.5C. The first step in the nuclear treaty process was a stock take of who had what weapons. Why not cut to the chase and agree to assess those fossil fuel reserves which, if burned, would carry us across the 1.5C warming line, and monitor their non-use and any measures likely to lead to the proliferation of fossil fuels.**

to meet the older 2C climate target let alone 1.5C. The first step in the nuclear treaty process was a stock take of who had what weapons. Why not cut to the chase and agree to assess those fossil fuel reserves which, if burned, would carry us across the 1.5C warming line, and monitor their non-use and any measures likely to lead to the proliferation of fossil fuels? "The fossil fuel industry knows with some certainty future production often decades in advance," says Carbon Tracker's Mark Campanale, "What we need is a global, public register setting out who controls the reserves from where the CO2 is coming."

The second pillar of the NPT is disarmament. This means rapid substitution of clean energy for fossil fuels. We know this can be done in ways which would also save tens of millions of lives by improving air quality. But "disarmament" would also be delivered by following the climate scientists' three point plan for action carrying the "highest benefits": lowering energy demand, lowering material consumption, and switching to food choices that are low carbon (in other words more plant-based food).

The final pillar concerns the promotion of the "peaceful" use of technology. In a climate context, that would mean massively expanding existing initiatives to compensate poorer countries for leaving fossil fuels in the ground, while ensuring access to clean energy and the technology needed for development. Funds could be also redirected from the staggering \$10m per minute that governments give in fossil fuel subsidies, according to the International Monetary Fund. Some governments have already proposed moratoriums on coal at national level and there are initiatives such as Powering Past Coal Alliance.

As far back as 1988 at the Toronto conference on the changing atmosphere, climatic upheaval was described as a threat "second only to nuclear war", a sentiment endorsed from the CIA to MI5 and the United Nations. National efforts are crucial, but a new fossil fuel non-proliferation treaty supported by movements calling to leave fossil fuels in the ground, would provide a transparent and fair means to stop climate breakdown. The best way to mark the 50th anniversary of the NPT would be to begin negotiation of its fossil fuel equivalent.

Source: <https://www.theguardian.com>, 23 October 2018.

## NUCLEAR SAFETY

### PAKISTAN

#### Simulating Nuclear Safety

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Commercial operation of the CHASNUPP-1 996 megawatt intermediate type pressurised water reactor began in May 2000 in Pakistan. It is a conventional two-loop PWR and is run by the Pakistan Atomic Energy Commission. Now,

scientists Khurram Mehboob and Mohammad Aljohani of the Department of Nuclear Engineering at King Abdul Aziz University in Saudi Arabia have carried out simulations of the activity of the unit using MATLAB to probe the risks associated with a putative coolant leak that might see radioactivity entering the environment. The team reports details of their study in the International Journal of Nuclear Energy Science and Technology.

The researchers point out that as energy demands growing around the world, there is a pressing need to meet this demand and nuclear power or sustainable sources can provide the alternatives that avoid the burning of fossil fuels. However, there are perennial concerns with the operation

of nuclear power stations and the associated risks of radiation leaks that might be caused by human error, systems failure, accident, or even criminal activity.

Mehboob and Aljohani have used a kinetic model in MATLAB to simulate the anticipated amount of radioactivity that might be released from the CHASNUPP-1 nuclear power plant in the form of contaminated coolant following an accident leading to core damage. The model suggests that leakage would be similar to another reactor, the South Korean KORI-1 reactor, and that the containment would be sufficient to preclude anything but negligible leakage into the outside world. Given the potential global impact of a leak from a nuclear reactor anywhere in the world, it is important to model worst-case scenarios and to understand the implications for the local and wider environment.

Source: <https://phys.org/news,17 October 2018>.

### NUCLEAR SECURITY

#### USA

#### **Suspicious Car Sparked Emergency Alert at Nuclear Weapons Plant**

A suspicious vehicle in the parking lot of the federal government's main nuclear weapons plant in Texas prompted an emergency alert, road closures and a call to the bomb squad but ended without incident on 23 Oct.

Employees at the Energy Department's Pantex Plant north of Amarillo sheltered in place shortly before noon local time while the vehicle, which drew attention during a "routine inspection," was searched, Steven Wyatt, a spokesman, said by email. He didn't say what was suspicious about the vehicle. "It was determined there were no prohibited items or explosives, and the emergency event was resolved without incident," Wyatt said. Local authorities closed a nearby highway while the incident unfolded at the sprawling 18,000-acre facility, which was originally designed to build bombs during World War II. Workers there now

assemble and dismantle nuclear warheads in special blast-hardened rooms. Since 1975, it has been the primary U.S. facility assembling and dismantling nuclear weapons, with a focus on extending the life of existing devices and decommissioning retired warheads.

Earlier, the plant said in a tweet it was experiencing an unspecified emergency related to a "security event" and had mobilized an emergency response team. A bomb team from the Amarillo Police Department responded to assist, Corporal Jeb Hilton said.

The facility is managed by the Energy Department and its National Nuclear Security Administration. The site's emergency preparedness has drawn attention before, such as in a 2017 U.S. Inspector General report that said, among other deficiencies, drills and other training exercises weren't always conducted. In 2010, the nuclear weapons plant was put on a security lockdown after employees spotted people in camouflage carrying rifles near the facility — only to later determine they were Pantex workers hunting legally on property that didn't belong to the plant.

The Pantex Plant was the sight of a near-miss incident involving the dismantling of a warhead in 2005, according to an account by *The Nation*. And hundreds of Pantex workers have received medical coverage or compensation for cancer and other medical ailments attributed to their jobs, according to government data cited by the Fort Worth Star-Telegram.

Source: Ari Natter, Jennifer A Dlouhy, <https://www.bloomberg.com>, 23 October 2018.

### NUCLEAR WASTE MANAGEMENT

#### USA

#### **Failures of Congress Keep Nuclear Waste Scattered Across the US**

In Zion, Illinois, 257 acres of prime lakefront property about 40 miles northwest of Chicago should be at the center of a redevelopment plan

to revive a struggling community caught in the aftermath of a closed nuclear plant, says its mayor, Al Hill. But after decades of federal inaction on a comprehensive strategy to move the nation's high-level radioactive waste from some 121 sites across the country, Zion and its local officials are coming to the same stark realization as many other communities with shuttered or aging plants: The federal government's foot-dragging on nuclear waste policy may seem as long as the radioactive materials' 10,000-year half-life.

Some 64 so-called dry cask storage units containing 2.2 million pounds of deadly spent nuclear fuel rods are stored on the site of what was the Zion Nuclear Power Station, the remnants from generating nuclear power since 1974. And they've left Zion in a kind of purgatory, unable to move on from its nuclear past even as it must shoulder the public safety and health risks from the inability of Congress and multiple administrations to decide how to dispose of the radioactive waste. "When businesses are considering locating in Zion or making real estate investments, the nuclear waste presents a negative perception of our community," Hill said. "Plans call for the development of the lakefront, and we are unable to attract investments to that, to what should be the most valuable waterfront land along Lake Michigan."

Aside from disposing of the spent fuel, the plant's shutdown, or decommissioning, has gone well.

The process is running nearly a decade ahead of the original timeline and below budget. The plant was shut down in 1998 after an operating error caused a breakdown in equipment deemed to be too costly to warrant fixing, according to its owner, Exelon Corp. of Chicago. It chose instead to close the reactor and ready it for a tear-down that it estimated would take 30 years to complete. Recognition of the growing legacy of nuclear waste is hitting members of Congress — especially those from states and districts where it awaits a federal disposal plan.

Six plants around the country have been shuttered since 2013, with eight more planned over the next decade, according to Beyond Nuclear, an anti-nuclear environmental group. A growing coalition of lawmakers is trying to advance some strategy, be it financial compensation or actually moving the nuclear waste.

**Growing Liabilities:** "Zion is the poster child for what some of these communities can look forward to," said Illinois Democratic Rep.

Brad Schneider. "Here we are 20 years later, spent fuel is still on the shore, 100 yards from Lake Michigan and still having an economic impact on the community, and there's no end in sight." Flanked by Hill and Democratic Sen. Tammy Duckworth in the shadows of the storage canisters holding Zion's waste, Schneider introduced legislation a year ago that would provide grants and tax credits to compensate communities for the negative economic effects of storing nuclear waste.

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**The bill is unlikely to become law this Congress, but one of its provisions — directing the Energy Department with other agencies to study the public and private financial resources available to communities storing nuclear waste on-site during decommissioning — made it into the Energy-Water title of the \$147.5 billion fiscal 2019 spending package passed last month.**

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More than 80,000 metric tons of high-level nuclear waste are stored at nuclear reactor sites in more than 35 states. The longer the waste sits, the more the government will be forced

to compensate nuclear power producers for its inaction. Estimates place the government’s liability from nuclear waste at \$34 billion and growing, a number that doesn’t include the effects on the communities unable to reuse the land. That liability stems from the Nuclear Waste Policy Act of 1982, which said the federal government would take responsibility for disposing of the waste in a nuclear repository. A 1987 update to that law dedicated the controversial Yucca Mountain site in Nevada as the location for that facility, despite protests from state and local officials in Nevada. Following \$15 billion in federal investment into research and development activities for Yucca Mountain, critics led by former Senate Democratic Leader Harry Reid of Nevada helped to shutter the site in 2010 after the Obama administration deemed it “unworkable,” in part due to the local opposition.

**In May, the House overwhelming passed legislation, 340-72, to address the impasse by jump-starting the Yucca Mountain license application pending before the Nuclear Regulatory Commission. That bill would also offer host states financial and infrastructure incentives to attract more local support, including for communities willing to host interim storage facilities.**

In its place, the Energy Department looked to advance a so-called consolidated, interim storage approach that would move the waste from nuclear plant sites to a centralized temporary facility in a more remote location. Private companies in West Texas and Southeast New Mexico have emerged as potential storage locations, but a lack of congressional authorization has prevented DOE from contracting with them to take some of the waste.

**Decade of Stalemate:** Congress has remained deadlocked on how to move forward on nuclear waste over much of the last decade, but a

consensus seems to have emerged in the House, led in part by a coalition of lawmakers facing the reality of reactor sites in their districts becoming de facto storage sites. “The more sites shut down, the more folks on both sides of the political aisle say ... we ought to move the used fuel,” said Rod McCullum, a senior director of used

fuel and decommissioning policy with the Nuclear Energy Institute.

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That type of compromise means the legislation will have staying power, even if the House should flip to Democratic control, say the bill's backers. The bill is unlikely to move in the Senate, as Nevada Sens. Dean Heller, a Republican, and Catherine Cortez Masto, a Democrat, have the ability to block consideration of the bill over their

opposition to the Yucca Mountain site. They have the backing of Senate leadership as the two parties look to control a swing state. But pressure is only going to grow as more lawmakers realize the longevity of the waste.

*Source: <https://www.rollcall.com>, 24 October 2018.*



Centre for Air Power Studies

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