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OPINION – Manpreet Sethi

Vol 15, No. 16, 15 JUNE 2021

Revisit Role of Nuclear Weapons to Make the Right Choices

May has just gone by and nuclear India is now 23 years old. The decision to test nuclear weapons in 1998 was taken to enhance the country's security against the individual and collusive threats from nuclear armed neighbours.

Questions, however, continue to be asked whether the country is more secure after having acquired nuclear weapons. Given that Pakistan continues to use terrorism against India, and that China has not been deterred from undertaking transgressions across the Line of Actual Control, how have nuclear weapons enhanced India's security? Despite possessing a nuclear arsenal, why does the country remain vulnerable to attacks? Why does India not threaten nuclear use against such provocations? Is nuclear India really more secure?

Answers to these questions require a correct understanding of the role, as well as the limitations of the role, of nuclear weapons. These are powerful WMD. Their destructive capability makes the possessor powerful in some dimensions and more

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CONTENTS

- ☞ **OPINION**
- ☞ **NUCLEAR STRATEGY**
- ☞ **BALLISTIC MISSILE DEFENCE**
- ☞ **EMERGING TECHNOLOGIES AND DETERRENCE**
- ☞ **NUCLEAR ENERGY**
- ☞ **URANIUM PRODUCTION**
- ☞ **NUCLEAR PROLIFERATION**
- ☞ **NUCLEAR DISARMAMENT**
- ☞ **NUCLEAR SAFETY**
- ☞ **NUCLEAR WASTE MANAGEMENT**

vulnerable in others. The weapons are not usable for every threat. In fact, they outright rule themselves out for use in certain contingencies since their brute power imposes a constraint on their own use, as well as on the use of other conventional capabilities in their presence.

Keeping this in mind, India has sagaciously carved out the use of nuclear weapons for a narrow purpose of nuclear

deterrence—to stop the adversary from using its nuclear weapons against oneself. This, in effect, is the only credible purpose for which these weapons can be deployed. So, while they have certainly secured India against the prospects of nuclear coercion or blackmail, they are not effective against other security concerns.

Use or threat of use of nuclear weapons against Pakistan's sponsorship of cross-border terrorism, for instance, cannot be useful or credible because it would make little sense to launch a nuclear strike in response to a terrorist attack. Unless India's first strike is a disarming one, which is virtually impossible given the robustness of Pak nuclear arsenal, India would only end up inviting nuclear retaliation. How can this be a good trade-off? So, in order to address Pak use of terrorism, India has to find and use other appropriate diplomatic, information, military and economic (DIME) instruments that punish the country for its acts and gradually push it to change its calculus on using terrorism.

Similarly, China's border skirmishes and transgressions, even attempts at territory slicing, have to be handled with a wide range of more practical conventional military instruments. Suggesting or undertaking the use of nuclear weapons could only lead one up the nuclear escalation and destruction ladder. Would military objectives at the border be worth such a cost? The focus, therefore, has to be on building appropriate capability in realms that are usable.

Another question arises on whether nuclear weapons can play a role in deterring chemical and biological weapon attacks. Well, the US with its large nuclear arsenal could not deter use of chemical weapons by a small, non-nuclear Syria. Neither have nuclear possessors found these

weapons useful in the current pandemic, even though it has often been referred to as biowarfare. The limits to how and what kind of reprisal can be undertaken in such cases owing to the difficulty in attribution stand well illustrated. Serious thought

is, therefore, required on the merits of exercising nuclear deterrence against other WMD. This applies to India's nuclear doctrine which proclaims retaining the option of nuclear retaliation against large-

scale chemical or biological attacks. This may never be doable and it would be prudent to omit this from the tasks that nuclear weapons can meaningfully perform.

On other fronts, India's nuclear doctrine has wisely identified guidelines for capability build up. It suggests a minimum arsenal that can cause unacceptable damage and narrowly circumscribes the circumstances of use of the weapon to only retaliation. There are lessons to be learnt from this.

The bottom line is that nuclear weapons offer limited utility. They play a most credible role only when seeking to stop the other's use of nuclear weapons. Employing them for anything less than

that skews the cost-benefit analysis towards unacceptable costs. Nations may proclaim doctrines that signal nuclear first use to deter threats ranging from conventional, cyber, biological and chemical, to even space attacks. But

such use can never make politico-military sense, and therefore, these strategies are less than credible. After all, it is not for nothing that nuclear weapon states have never found it worthwhile to use the weapons in the last 75 years.

The high salience being accorded to nuclear weapons in national arsenals today is regrettably premised on a chimerical utility. While there are limited scenarios in which deliberate, pre-meditated use of nuclear weapons could appear

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useful, chances of inadvertent nuclear use seem to be getting higher as nations maintain large arsenals on hair trigger alert and dabble in offence-defence spirals.

A correct comprehension of role of nuclear weapons is key to tempering inflated expectations from them—what a blade can do, a sword cannot. This understanding would enable making right choices that assure credible nuclear deterrence at an optimal level and cost. It is time for all nations to revisit the role of nuclear weapons, recall the basics of nuclear deterrence, and do a course correction for the sake of humanity.

Source: <https://www.sundayguardianlive.com/opinion/revisit-role-nuclear-weapons-make-right-choices>, 12 June 2021.

OPINION – Hiroyuki Akita

Japan Must Reassess US Nuclear Deterrence Against North Korea

Japan was warned years ago about the risk of a major outbreak of a new infectious disease like COVID-19. A Japanese council tasked with drawing lessons after the 2009 swine flu pandemic, caused by the H1N1 influenza virus, warned of a future public health crisis caused by a global outbreak of an infectious disease. The panel called for policies to improve the nation's preparedness for virus outbreaks, including steps to enhance public health centers and capabilities to develop vaccines.

But the government ignored the panel's proposals. It did nothing, clearly underestimating the risk and failing to take the warning seriously. Nothing is more dangerous than groundless optimism. Much the same is true with Japan's attitude toward North Korea's nuclear program. Tokyo's defense white paper says Pyongyang already has deployed missiles that can strike Japan with nuclear weapons. The secluded Stalinist country also continues manufacturing nuclear warheads.

News organizations like The Nikkei should not try to make such a security threat look more serious than it actually is. Still, it is hard to deny that the threat posed by North Korea's arms programs should alarm policymakers. The Group of Seven major industrial nations will hold a summit June

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11-13 in Britain. China will dominate the discussions among the G-7 leaders, leaving little time for in-depth conversation on North Korea. Though the leading Western powers agree on the need to push Pyongyang into abandoning its nuclear

arsenal, they have no specific, workable strategy to achieve the goal.

Disturbed by the situation, President Joe Biden started reviewing American policy toward North Korea immediately after he took office. His administration tried to devise an effective plan to denuclearize North Korea. But since the administration said at the end of April that the review process was completed. Biden has taken no notable policy action that reflects any change in the approach to dealing with Kim Jong Un's regime in Pyongyang.

The administration has held unofficial meetings with various American think tanks, but most of the topics concern China, with little attention paid to North Korea-related issues, a U.S. security expert said. Interviews with people informed about the matter paint a grim picture of Biden's team struggling to tackle the challenge. Though the White House has offered little clue to the conclusions drawn from the review, three guiding principles have been formed, according to remarks made on condition of anonymity by people inside and outside the administration.

First, the strategies adopted by former Presidents Donald Trump and Barack Obama both failed to work. Trump tried to strike a package deal to solve the problem in one fell swoop through direct negotiations with Kim. Obama adopted the policy of "strategic patience" toward North Korea, which

basically meant focusing on sanctions while waiting for Kim's regime to credibly commit to giving up its nuclear warheads and missiles. Neither approach was successful.

Second, Biden should focus on efforts to achieve gradual denuclearization of the North through working-level talks between U.S. and North Korean officials supported by a united front among Washington, Tokyo and Seoul.

Third, the U.S. will maintain some flexibility in negotiating with North Korea and will leave the door open for offering rewards, such as humanitarian aid, for any concrete action taken by Pyongyang toward dismantling its nuclear arsenal.

In a nutshell, the Biden policy toward North Korea is almost the same as President George W. Bush's strategy. At the end of 2002, when Bush was in the White House, North Korea resumed operations at its nuclear facilities, sparking a crisis that has continued to this day. Alarmed by the move, the Bush administration swiftly set up a framework for six-nation talks on Pyongyang's nuclear ambitions, involving the U.S., China, North Korea, Japan, South Korea and Russia.

Washington used this platform to launch direct, working-level negotiations with Pyongyang. Through rounds of talks, the Bush administration in September 2005 extracted a commitment from the North to abandon its nuclear arms. Biden wants to bet on a similar incremental approach, but this strategy has little chance to succeed.

The fact is, the Bush strategy failed to stop Pyongyang from arming itself with nuclear weapons. While negotiating with Washington, North Korea secretly continued developing atomic

bombs and ballistic missiles. The country conducted its first nuclear test in 2006. After Bush was succeeded by Obama in 2009, Pyongyang officially trashed the agreement with the U.S. to discard its nuclear arsenal.

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Two crucial differences exist between the Bush era and today. One, needless to say, is that North Korea already owns nuclear bombs. Persuading a nuclear power to scrap missiles and weaponry already deployed is far more difficult than pressuring a country into

pulling the plug on its plan to develop nuclear arms.

Second, the intensifying confrontation between the U.S. and China gives Biden little chance to win support from Beijing for efforts to denuclearize North Korea. During the Bush presidency, the U.S.-China relationship was on far better footing. Bush

often told aides that denuclearizing North Korea could be achieved if his White House worked with China, a former administration official said. China chaired the six-party talks between 2003 and 2008.

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How things have changed.

Now, instead of pressuring Pyongyang to discard its nuclear weapons, Beijing is increasing support to the North, viewing it as a bulwark against an expansion of the U.S. sphere of influence in the Korean Peninsula, according to a diplomat following China-North Korea ties.

Michael Green, senior vice president for Asia and Japan chair at the Center for Strategic and International Studies in Washington, was a senior White House staffer involved in developing and executing Bush's strategy for North Korea. He is not optimistic about progress toward nuclear disarmament by Pyongyang.

"Even if the U.S. manages to hold nuclear talks with North Korea, North Korea will likely show only small concessions such as the partial closure of nuclear facilities and the freeze on the missile tests, and will demand a return," Green said. "Sooner or later, North Korea may also resume tests of intercontinental ballistic missiles that can reach the U.S. mainland. The Biden administration should be aware of such risks."

If so, countries such as Japan and the U.S. should hammer out a Plan B based on the assumption that Pyongyang will not scrap its nuclear arms, at least in the foreseeable future. Though these nations must not give up on the ultimate goal, it would be irresponsible and dangerous for them to act on groundless optimism in dealing with this security threat.

Japan and South Korea, fully within range of North Korean missiles that can carry nuclear warheads, face a dire situation. Tokyo should, first and foremost, review and reinvent its own strategy for wrestling with the challenge.

Tokyo needs to ask hard questions such as whether its current missile defense system would really defend the nation against North Korean missile attacks and how effective the U.S. "nuclear umbrella" would be as deterrent against the threat posed by Pyongyang's growing stock of nuclear weapons. If the answers to these questions are not satisfactory, Japan needs to devise additional measures to bolster its defense.

All these strategic issues must have been carefully weighed by Japanese policymakers. But they need to be subjected to a fresh and sweeping review for fundamental reappraisals. Japan's uphill battle to contain the new coronavirus offers some vital lessons about the consequences of failure to prepare for the worst.

Source: NIKKEI Asia, <https://asia.nikkei.com/Spotlight/Comment/Japan-must-reassess-US-nuclear-deterrence-against-North-Korea>, 07 June 2021.

OPINION – Walter Pincus

What Biden's Nuclear Posture Review is Missing

Buried in the Biden fiscal 2022 budget for the NNSA is \$98.5 million to begin extending the service life of the almost 40-year-old, B83-1 nuclear gravity bomb, the last one in the U.S. arsenal that can deliver a one megaton explosion – that's the equivalent of one million tons of TNT. It's time to get rid of the B-83. To keep it in the nuclear arsenal illustrates the lack of serious thinking associated with nuclear weapons.

Seven years ago, in June 2014, the Obama administration announced it would retire the B-83 and replace it with the proposed B61-12

nuclear gravity bomb, the first of which was to be produced in 2020. In August 2016, then-Secretary of Energy Ernest Moniz told Congress "Once completed, the B61-12 LEP (Life Extension Program) will allow for the retirement of the B83-1—the last megaton-class weapon in America's nuclear arsenal—while supporting the nation's continued commitment to our national

security and that of our allies and partners."

However, two years later, the 2018 Trump Nuclear Posture Review directed the NNSA to "retain the B83-1 until a suitable replacement is identified," although at the time, the B61-12 program – though more costly than expected – was moving forward.

In April 2019, then-Deputy Administrator for NNSA Defense Programs Charles Verdon, said the agency wanted about \$52 million for B-83 stockpile sustainment in fiscal 2020, during a hearing of the Senate Appropriations energy and water subcommittee. "What is that for?" Senator Dianne Feinstein asked during that hearing. "We've upped the surveillance on [B83] in order to meet the annual assessment requirements associated with...keeping it in the stockpile longer," Verdon said. Feinstein asked if the

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Pentagon wanted to keep the B83 in the NNSA's active stockpile because its destructive yield was potentially so much greater than the B61. Verdon said the Defense Department's decision was "based on their need for targeting: what they need for targets that they're provided that they have to hold at risk." Feinstein did not ask what targets needed a one megaton thermonuclear bomb to be held at risk, but the indication was that they were underground. At the time, the U.S. reportedly had 100 B83s in the stockpile [650 B83s were originally produced].

In January 2020, it was reported that America's main strategic bomber, the B-52H, was no longer configured to carry the B83 bomb. That left only B-2s authorized to carry the B83 and there are at most, 20 of those aircraft. In June 2020, the Nuclear Weapons Council, the senior Pentagon group that develops stockpile options and includes the NNSA Administrator, decided to extend the life of the B83, a plan that then-President Trump later signed off on. So far, the Biden team has not objected.

The Biden NNSA fiscal 2022 budget released ten days ago, included funds to "begin implementation of B-83 extension," according to a document sent to Congress. The requested \$98.5 million would "start initial activities," the NNSA document said, which included replacement of neutron generators, Tritium reservoirs, and the development of a Joint DoD/NNSA Test Assembly program.

The B61-12 has been successfully tested in drops from the F-35 fighter-bomber and B-2. The fiscal 2022 budget also provides funds to move the B61-12 to full scale production which is scheduled to be completed in 2026. It was the Trump 2018 Nuclear Posture Review that revived the B83; it

should be the Biden Nuclear Posture Review that retires this unneeded weapon for good. The Biden group should also rethink \$10 million in the fiscal 2022 NNSA budget to begin a feasibility study and design options for the W80-4 warhead for a low-yield, revival of a Navy SLCM.

This would not be a new nuclear weapon but rather the return of one that then-President George H.W. Bush wisely withdrew in 1991 as a part of his plan to limit forward deployed, tactical nuclear weapons. Back

then, there was a nuclear version of the dual-purpose, Tomahawk cruise missile deployed on some Navy ships and attack submarines. The 2010 Obama Nuclear Posture Review called for retirement of those nuclear Tomahawk cruise missiles. Although Russia retained many of its tactical nukes, the Obama review said, "Because of our improved relations [with Moscow], the need for strict numerical parity between the two countries is no longer as compelling as it was during the Cold War."

The Navy has kept the non-nuclear, conventional Tomahawk cruise missiles on ships and attack submarines and used them in 2018 to attack Syrian targets. When those Tomahawks were launched, no one watching them fly toward targets had to worry that they could have nuclear warheads.

Again, the Trump 2018 Nuclear Posture Review saw it differently. It worried about Russian tactical

nuclear weapons in Europe and China's nuclear, intermediate-range missiles in the Far East. To meet those challenges, the Trump team called for developing "a modern, nuclear-armed, sea-launched cruise missile...[with] a low-yield SLBM warhead." Since it would be at sea, it "will not require or rely on host nation support to provide deterrent effect," the Trump review said. While

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there was no immediate direct threat to the U.S., officials working for Trump called it “a valuable hedge against future nuclear ‘break out’ scenarios.” But we already have low-yield tactical nuclear weapons in B61 bombs, whose dial-a-yield capability can be exploded way below one kiloton, or the equivalent of around 300 tons of TNT.

The U.S. already has recently deployed a new, low-yield, nuclear warhead, the W76-2, on Trident D-5s, submarine-launched strategic ballistic missile submarines. Their presence puts Russia or some other target country in position to guess how powerful a warhead on that missile may be, since most W76’s on the D5s are in the 100 kiloton range. Biden, back in July 2019, described the low-yield nuclear weapons as a “bad idea.”

It is not as if the Biden team eliminating the B83, the proposed low-yield, nuclear Tomahawk warhead and even the W76-2, would leave the U.S. without a modernized nuclear arsenal. According to the latest State Department report of October 1, 2020, the U.S. currently has 675 deployed strategic nuclear delivery systems (165 more than the Russians), and 1,457 deployed strategic warheads (10 more than the Russians).

Meanwhile, the Biden fiscal 2022 NNSA budget also provides funds for upgrading warheads for the Air Force’s new, nuclear long-range, stand-off air-launched cruise missile (W80-4); the Navy’s Trident D5 SLBM (W88); the Air Force’s new Ground Based Strategic Deterrent missile (W87-1), and the Navy’s new SLBM (W93) for the new Columbia strategic submarine. There is also money for testing the newly refurbished

warheads for currently deployed SLBMs (the W76); production of the B61-12; pre-production of the refurbished warhead in the Minuteman III (W78).

The Defense Department is doing its share in the nuclear field. Biden’s fiscal 2022 Pentagon budget has \$27.7 billion for modernization of the land, sea and air systems that will deliver nuclear weapons. There is \$5 billion for the new Columbia submarines; \$3 billion for the B-21 long-range strike bomber, \$2.6 billion for the new Ground Based Strategic Deterrent ICBM, and \$609 million for the long-range, stand-off ALCM.

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new Ground Based Strategic Deterrent ICBM, and \$609 million for the long-range, stand-off ALCM.

The Obama 2010 Nuclear Posture Review has as one of its main objectives, “Reducing the role of U.S. nuclear weapons in U.S. national security strategy.” The Biden fiscal 2022 budget proposal for NNSA does not do that. The Biden Nuclear Posture Review should take another look, particularly in a world where cyber and space are becoming more dominant as war fighting domains.

Beijing’s claim of 90 percent of the South China Sea does not have any legal basis and is a purely arbitrary claim that tramples on the rights of five other countries, including the Philippines, that border on this body of water, which belongs to the global commons.

Source: *The Cipher Brief*, https://www.thecipherbrief.com/column_article/what-bidens-nuclear-posture-review-is-missing, 08 June 2021.

OPINION – Walden Bello

China, US Must Both Stop Destabilization

China’s seizure of maritime formations that are within the Philippines’ 200-mile exclusive economic zone in the West Philippine Sea is illegal and should stop. Beijing’s claim of 90 percent of the South China Sea does not have any legal basis and is a purely arbitrary claim that tramples on the rights of five other countries, including the Philippines, that border on this body of water, which belongs to the global commons.

We cannot, however, be narrow-minded and myopic and single out China for condemnation and limit our demand to asking it to “leave” the area. We must also ask the United States to pack up and leave. This is not just for reasons of justice. It is also for the very practical reason that without a US military withdrawal from the South China Sea, China will not depart.

China’s moves in the West Philippine Sea and the South China Sea are unjustifiable but they are understandable. The reason Beijing has made the provocative moves of seizing maritime formations from the Philippines is to place surface-to-air missile emplacements on them as part of an effort to extend a defensive perimeter to ward off a potential US attack. Even the Pentagon does not view China’s moves in the South China Sea as offensive in nature but as part of Beijing’s overall strategy of strategic defense.

Is China being Paranoid?No. First of all, the reality is that the South China Sea is and has been an “American lake” since World War II. The US 7th Fleet controls the South China Sea with its carrier task forces, accompanied by scores of surface ships, nuclear-powered and nuclear-armed attack and strategic submarines, and provocative air reconnaissance with fighter support up to 12 miles off the Chinese coast. This is the spearhead of a forward-deployed military presence of some 50 major US military bases ringing China from Northern Japan to Diego Garcia in the Indian Ocean.

Second, the operative warfighting doctrine of the US is “Airsea Battle,” which involves cruise missiles that can overcome Chinese anti-missile defenses to deliver conventional and nuclear payloads on China’s coastal industrial infrastructure and “blind” its electronic defenses.

Third, from Obama to Trump to Biden, China has

been defined as the US’ strategic enemy, with Biden’s Department of Defense zeroing in on China as “DOD’s No. 1 pacing challenge,” to meet which it “will develop operational concepts, capabilities and plans to bolster deterrence and maintain its competitive advantage.”

The South China Sea is today the world’s premier hotspot, with US and Chinese ships engaged in “war games” of chicken where opposing ships and planes bear down on each other to swerve only at the last minute. The danger of a ship collision escalating into a major confrontation involving the use of conventional arms or nuclear arms cannot be discounted in a region where there are no rules of the game except a very unstable balance of power.

Beijing will not stand down unless the US withdraws its military threat to China as well. Thus, the Philippines and the Association of Southeast Asian Nations (Asean) must take the initiative and propose a demilitarization agreement that will involve China’s withdrawal from maritime formations seized from the Philippines, cease interfering with the livelihoods of Filipino and other fishers, and shelve its claims to the whole South China Sea, in return for the US’ withdrawal from the area of its 7th Fleet and five bases in the Philippines and junking the Visiting Forces Agreement.

If successful, these measures could eventually pave the way for more positive relations between China, the Philippines, and ASEAN built on jointly developing the resources of the South China Sea and protecting its unique ecosystem. Bringing about this future based on common prosperity is not impossible, but the first hard steps must be taken.

Source: Walden Bello is national chair of Laban ng Masa and the international adjunct professor of sociology at the State University of New York at Binghamton. <https://opinion.inquirer.net/141090/china-us-must-both-stop-destabilization>, 12 June 2021.

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OPINION – Kate Hudson

The UK's New Nuclear Strategy is Illegal and Dangerous to the World

The UK government has announced it is increasing the number of nuclear warheads for its Trident submarine fleet to 260. But just as worrying is who Britain is now threatening to use them against. Until now, the size of the UK's nuclear arsenal had been on a downwards trajectory. Britain was set to reduce the number of warheads from 225 in 2010 to 180 by the mid-2020s, a decision made by David Cameron's coalition government of 2010-15.

This downsizing was part of three decades of gradual reductions in the UK's nuclear arsenal, which included retiring its free-fall nuclear bombs in 1998. Britain now has roughly 195 warheads, each about eight times the power of the Hiroshima bomb.

Even more concerning is that Johnson's government has changed Britain's stance on the use of nuclear weapons. The new UK policy, unveiled in its long-awaited "Integrated Review of Security, Defence, Development and Foreign Policy", sits more easily in the framework of "usable" nuclear weapons which were produced and deployed in former US president Donald Trump's last year in office.

The UK now reserves the right to use nuclear weapons not only against nuclear threats but against enemies possessing chemical and biological weapons or "emerging technologies that could have a comparable impact".

The British government is also threatening to use its nuclear arsenal against non-nuclear weapons states that are said to be heading in the direction of acquiring nuclear weapons — or, as the Integrated Review puts it, those states judged to

be "in material breach of [their] non-proliferation obligations".

This is a major change in policy and it is easily understood as a thinly veiled reference to Iran. The British government has repeatedly said that "Iran must never develop a nuclear weapon".

The Integrated Review says the UK will embark on "a renewed diplomatic effort to prevent Iran from developing a nuclear weapon". But London appears to be sending a message to Tehran that is not just about diplomacy.

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Breach of International Law:

It had not been expected that the UK would increase its nuclear arsenal by over 40%. The decision has given rise to international criticism and

is at odds with the renewal of the New START Treaty by presidents Biden and Putin earlier this year, which continues bilateral nuclear weapons reductions between the US and Russia. The legality of Britain's changed policy was rapidly called into question. The Office of UN Secretary General Antonio Guterres said the UK decision was contrary to its obligations under Article VI of the NPT — in other words, it is illegal under international law.

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This triggered the Campaign for Nuclear Disarmament to seek a legal opinion from experts, who found that the UK is indeed in breach of the NPT. Article VI specifies that signatories undertake to "pursue negotiations in good faith on effective measures" towards disarmament. The legal

opinion finds that an increase in nuclear warheads does not constitute a good faith intention to negotiate and that "good faith" is not just mood music — it has legal status and requires concrete outcomes.

The legal opinion also finds that the UK's change in stance on the use of nuclear weapons is in breach of international law. Any use of nuclear weapons would violate international humanitarian law and a whole raft of legal obligations relating to the environment, proportionality, distinction and other matters enshrined in law.

What's more, others breaking international law does not make it legally acceptable to do so in return. The NPT is actually very simple — it requires countries that have nuclear weapons to disarm, and those that don't have them not to get them. The UK government routinely claims that its nuclear weapons are not illegal. It states: "The UK's nuclear deterrent is fully consistent with our international legal obligations, including under the Treaty on the Non-Proliferation of Nuclear Weapons".

Technically the weapons themselves are not illegal, but the government's retention of them is — as would be their use or threat of use — as the legal opinion clearly demonstrates. All UK governments since 1970, when the NPT came into force, have had a twin-track position — on the one hand pledging commitment to the goals of the NPT, and on the other insisting that the UK's own nuclear weapons are both essential to its own security and acceptable under the NPT. As prime minister, Tony Blair attempted to reinterpret the NPT to mean that the five nuclear weapons states signatory to it were allowed to be nuclear weapons states and the emphasis of the Treaty should be non-proliferation. This didn't cut any ice with the majority of states but de facto this is the situation.

And because the nuclear weapons states do not comply with the NPT it has led to further attempts, led by the countries of the global south, to use

other legal instruments to get rid of nuclear weapons — notably the UN's Treaty on the Prohibition of Nuclear Weapons (TPNW) which became international law in January of this year.

Replacement of Trident: The outrage from political quarters over the UK's increase in warheads suggests the downwards trajectory in nuclear numbers had received general approval. But some who express outrage also back the replacement of the Trident nuclear weapons system, indicating they think some new nuclear weapons are good, but just not too many. Legally speaking though, it's not just new warheads that breach international law, it's the whole Trident replacement project as well.

Rather than disarming, the UK is in the process of replacing all three component parts of the Trident system: the warheads, the missiles that carry them to their targets and the submarines that carry them around under the sea. When Blair's government first pursued Trident replacement in 2005, the law firm Matrix Chambers gave a legal opinion finding that it would be a material breach of the NPT because of the Article VI requirements to pursue disarmament.

Bizarrely, British governments always assert their unflinching commitment to the NPT, and the Integrated Review is no exception. It states: "We are strongly committed to full implementation of the NPT in all its aspects, including nuclear disarmament". Sadly, that's just not true. Indeed our government — with all its talk of the "rules-based international order", the super-soft power of the BBC, its leadership in diplomacy — completely ignores the Treaty. Its decision to increase the arsenal has fired a Trident missile through any pretence at fulfilling its legal obligations. Despite its non-compliance with the

The legal opinion also finds that the UK's change in stance on the use of nuclear weapons is in breach of international law. Any use of nuclear weapons would violate international humanitarian law and a whole raft of legal obligations relating to the environment, proportionality, distinction and other matters enshrined in law.

The UK's nuclear deterrent is fully consistent with our international legal obligations, including under the Treaty on the Non-Proliferation of Nuclear Weapons". Technically the weapons themselves are not illegal, but the government's retention of them is — as would be their use or threat of use — as the legal opinion clearly demonstrates.

Treaty, the Review is quick to assert that “there is no credible alternative route to nuclear disarmament” except the NPT. This is a thinly veiled reference to the government’s hostility to the new TPNW.

Britain’s decision to increase its nuclear arsenal clearly demonstrates why so many other countries have given up hope in the NPT process which has been rendered meaningless by the actions of states such as ours. Johnson’s decision to increase Britain’s nuclear arsenal is a serious problem. It’s not just that we would rather the money was spent on something more useful, or that this flagrant breach of the NPT may encourage others to pursue nuclear weapons.

It is also a question of what kind of world we want to see, what role we want Britain to play and what it actually stands for. Rearming with weapons of mass destruction is not something that we can accept.

Source: Kate Hudson is General Secretary of the Campaign for Nuclear Disarmament in the UK. Declassified UK, <https://www.dailymaverick.co.za/article/2021-06-09-the-uks-new-nuclear-strategy-is-illegal-and-dangerous-to-the-world/>, 09 June 2021.

NUCLEAR STRATEGY

CHINA

China’s Rocket Forces have been Practicing Launching ‘Carrier Killer’ Missiles in the Dark during Midnight Drills

The Chinese military has been practicing firing missiles in the dark, a more difficult task for troops than a daytime launch, Chinese state media reported. The Chinese People’s Liberation Army Rocket Force has been practicing carrying out simulated multi-wave ballistic-missile strikes in a series of recent midnight exercises, Global Times reported, citing a China National Radio report.

Col. Jiang Feng, the deputy commander of a missile brigade, told Chinese media that his forces “have been holding night exercises on a regular basis recently, which usually lasted past midnight. They featured the random changes of launch positions and targets, consecutive fire strikes and relocations.” Video footage from the exercises, which reportedly required troops to go through the firing process, relocate, reload, and then fire again, showed Chinese troops training with DF-26 intermediate-range ballistic missiles.

The DF-26 is road-mobile, ground-launched multi-role ballistic missile with an estimated range of about 2,500 miles, giving China the ability to strike Guam, a strategically valuable US territory in the Pacific. The weapon was first revealed

at a military parade in 2015 and then fielded the next year. Because it can reach Guam, it has been referred to as the “Guam Killer” or “Guam Express” but the weapon is also referred to as a “carrier killer” because it has an anti-ship role like the DF-21D.

As the Department of Defense explained in its most recent assessment of China’s military power, the DF-26 “is capable of conducting both conventional and nuclear precision strikes against ground targets as well as conventional strikes against naval targets.” Last summer, as two US Navy carrier strike groups conducted joint operations in the disputed South China Sea, the state-affiliated Global Times wrote that “China has a wide selection of anti-aircraft carrier weapons like DF-21D and DF-26 ‘aircraft carrier killer’ missiles.” The Chinese outlet wrote that the “South China Sea is fully within the grasp of the Chinese PLA, and any US aircraft carrier movement in the region is solely at the pleasure of the PLA.” The US Navy shrugged it off, saying that it is “not intimidated” by China’s capabilities.

While China’s growing missile arsenal has not deterred the US from operating in the area, it has

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led the US military to rethink the way it might wage war in the Pacific. Recognizing that the DF-26 and other Chinese weapons have the ability to threaten important US bases and assets, as well as potentially cripple critical power-projection platforms like aircraft carriers, the US has been looking closely at force dispersal and new standoff capabilities.

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In August, the Chinese military test-fired two DF-26 ballistic missiles into the South China Sea. Chinese forces also test-fired two DF-21D intermediate-range ballistic missiles. US Navy Adm. Philip Davidson, then the head of US Indo-Pacific Command, said in March that China is trying to “send an unmistakable message” with this kind of exercise. China, he said, “is not merely developing advanced weapons systems but is increasingly employing them in training and exercise scenarios to hone PLA warfighting skills and send an unmistakable message to regional and global audiences about China’s capabilities.”

Source: Ryan Pickrell, *Business Insider*, <https://www.businessinsider.in/international/news/chinas-rocket-forces-have-been-practicing-launching-carrier-killer-missiles-in-the-dark-during-midnight-drills/articleshow/83443964.cms>, 12 June 2021.

GENERAL

Nuclear-Armed Nations Spent \$137,666 Per Minute on Arsenal in 2020: Report

The nine nuclear-armed countries in the world spent a whopping \$137,666 per minute on nuclear weapons in 2020, a report by the International Campaign to Abolish Nuclear Weapons said on 13 June. Researchers also cited that the decline in the nuclear arsenal, which began in the 90s, seems to have stalled as nations have started modernising their strategic weapons.

“The reduction of nuclear arsenals that we have gotten used to since the end of the Cold War appears to be levelling out,” Hans Kristensen, associate senior fellow at SIPRI’s Nuclear Disarmament, Arms Control and Non-proliferation Programme was quoted as saying by the news agency AFP. The weapons possessed by the US, Russia, the UK, France, China, India, Pakistan, Israel and North Korea — totalled 13,080 at the start of 2021. This is a slight decline from 13,400, recorded at the beginning of 2020.

2000 Warheads Ready to be Fired within Minutes: According to the report, the warheads, which have been deployed with operational forces increased from 3,720 to 3,825. Interestingly, 2000 of these were kept in a state of high operational alert, which implies that they were ready to be launched in minutes.

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The US and Russia, which hold 90 per cent of the nuclear weapons in the world, have continued to dismantle their retired nuclear warheads. The two countries also extended

their ‘New START’ nuclear arms reduction treaty by another five years at the beginning of 2021. “I think that the Biden administration is signalling quite clearly that it is going to continue the overwhelming main thrust of the nuclear modernisation programme that was underway during the Trump years,” Kristensen further said. He further added that there has been significant nuclear modernisation of programmes all around the world.

Source: <https://www.timesnownews.com/international/article/nuclear-armed-nations-spent-137666-per-minute-on-arsenal-in-2020-report/770175>, 14 June 2021.

INDIA

In a major boost to the government’s bid to indigenise the defence sector, the first three

nuclear attack submarines planned to be built by the Indian Navy would be 95 per cent made in India. The Cabinet Committee on Security is considering the Navy proposal worth over Rs 50,000 crore for indigenously building three nuclear attack submarines which would be built by the DRDO in Visakhapatnam. In a separate project, Arihant class nuclear-powered submarines are being built with the capability of launching ballistic missiles. ...

The project would also be very helpful for the economy as it is expected to generate a large number of jobs in the defence sector, sources said. The Navy and DRDO would first get a clearance for three of these boats and will have the option of building three more after the completion of this project. The Indian Navy proposal to have six indigenous nuclear attack submarines was one of the first few major defence modernisation proposals to have been cleared by the Narendra Modi government soon after it came to power in 2014.

Despite some delays, India has been making big headways in the field of indigenous submarine building capability. The first Arihant class boat was commissioned a few years ago and the second one INS Arighat is also undergoing sea trials and is expected to be commissioned in near future. India has plans to build 24 submarines, including six with nuclear attack capabilities, which would give it long legs to operate in the Indian Ocean region and will help it to keep its adversaries in check at long distances.

The first six conventional boats are already under construction in Mumbai under the Kalavati class project while the tender for the next six with greater capability would be issued soon after recent clearance by the Defence Ministry. There

is a plan to build six more conventional submarines under Project 76 but it will take a long time to be initiated. India is also leasing nuclear attack submarines since the 1990s which have helped it remain current on the operations of such boats.

Source: Manjeet Negi, <https://www.indiatoday.in/india/story/first-three-navy-uke-attack-submarines-95-made-in-india-1814295-2021-06-13>, 13 June 2021.

RUSSIA

Russia is Saying Goodbye to its Last Soviet-Era Ballistic-Missile Submarines. Here's What's Replacing Them

In April, the Russian Navy announced that the Ekaterinburg, its second-oldest Delta-IV-class nuclear-powered ballistic-missile submarine, will begin its decommissioning process in 2022. The sub has spent almost two years laid up at port in

Severodvinsk, and its decommissioning will be the end of a more than 36-year career, one with its fair share of mishaps and accidents as part of the Soviet and Russian navies.

Ekaterinburg's decommissioning is also the beginning of the end for the Delta-class series of nuclear-powered ballistic-missile submarine, or SSBN, that has been the backbone of the Soviet and Russian SSBN fleet for decades. The Deltas will be replaced by the long-awaited and much-anticipated Borei-class.

Known in Russia as the Project 667BDRM Delfin-class, the Delta IV boats are the fourth and final iteration in a long series of 43 SSBNs, the first of which was introduced in the early 1970s. At 544 feet long, Delta IVs have four torpedo tubes and 16 silos. They were originally armed with R-29RM Shtil SLBMs, which were eventually upgraded to

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the R-29RMU Sineva in 2007. After 2014, some Delta IV boats were given the R-29RMU2 Layner SLBM as well.

The missiles are each capable of carrying four MIRVs, each of which contain warheads that can be directed to different targets. The Shtil's MIRVs carried 100-kiloton nuclear warheads, while the Sineva's and Layner's carry 500-kiloton warheads. Seven Delta IVs are in service with the Russian Navy. One of them, Podmoskovye, was converted into a Special Mission submarine in 2016 for intelligence missions. Instead of carrying nuclear missiles, the Podmoskovye acts as a mothership, carrying underneath it smaller subs like the Losharik, a secretive nuclear submersible believed to be used for espionage and which suffered a deadly fire in July 2019. (Losharik could be out of service until 2025.)

Aside from the seven Delta IVs, one Delta-III-class submarine, Ryazan, is also in service. All Delta IVs are currently serving in

Russia's Northern Fleet, while the lone Delta III serves with the Pacific Fleet. Ekaterinburg was the second Delta-IV-class boat to be built. Laid down in 1982 and commissioned in 1985, it has had an interesting history to say the least.

On August 6, 1989, during Operation Behemoth, Ekaterinburg attempted to launch all 16 of its R-29RM Shtil SLBMs while underwater - the first time any SSBN had tried such a feat. The first launch was successful, but a rocket-fuel leak in the second missile sparked a fire, causing the test to be terminated. The missile itself was destroyed, but Ekaterinburg escaped without any serious damage. Exactly two years later, its sister-boat, Novomoskovsk, conducted the test successfully, launching all 16 missiles in three minutes and 44 seconds.

In 2011, a fire broke out on Ekaterinburg's bow while it was in a floating drydock in Murmansk. Attempts to extinguish the blaze were unsuccessful, and the fire burned for almost a

full day before it was decided to submerge the submarine to put out the fire. While the fire was out, Ekaterinburg was heavily damaged and had to undergo a three-year repair process. It was later revealed that Ekaterinburg was actually carrying its full load of nuclear SLBMs when the fire broke out, a violation of normal procedure. The decision to submerge, then, prevented what could have been the worst nuclear disaster since Chernobyl.

After being repaired, Ekaterinburg served as any other SSBN in the Russian Navy. It was involved in a few missile tests and conducted a number of patrols with the Northern Fleet. Ekaterinburg and the rest of the Delta-IV boats will eventually be replaced by the Borei-class. Though design work started in the mid-1980s, construction of the first

Borei-class boat, Yury Dolgorukiy, did not begin until 1996, and it did not enter service until 2013.

Despite being smaller than the famous Typhoon-class, the Borei-class is considered the most advanced SSBN Russia has built. Features

like new sonar systems and a pump-jet propulsion system make it considerably quieter than its predecessors. It also has a new suite of electronics and control systems. The Borei-class has six torpedo tubes and 16 missile silos that house new RSM-56 Bulava SLBMs. The Bulava can carry anywhere between six to 10 MIRVs, each with 100- or 150-kiloton yields.

Like the Yasen-class nuclear-powered guided-missile submarine, production of the Boreis hit repeated delays, which in turn allowed the Russians to refine the design. As a result, the Borei-A subclass was created, with different dimensions and even more advanced tech. There are currently four Boreis in service. The most recent of them, Knyaz Vladimir, was commissioned last year and is the first Borei-A in service. The next Borei-A, Knyaz Oleg, is currently undergoing sea trials.

Two of the Boreis are assigned to the Northern Fleet, while the other two are assigned to the Pacific Fleet. The Russian Navy plans to have 10

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Boreis in service by the end of the decade. The 10 Boreis were originally planned to be distributed evenly between the Northern and Pacific fleets, but after the Umka-2021 exercise, in which three Boreis surfaced through the Arctic at the same time, the Russian Defense Ministry reportedly decided to prioritize their delivery to the Northern Fleet.

Source: Benjamin Brimelow, <https://www.businessinsider.in/international/news/russia-is-saying-goodbye-to-its-last-soviet-era-ballistic-missile-submarines-heres-whats-replacing-them-/articleshow/83512054.cms>, 14 June 2021.

The Russian Navy plans to have 10 Boreis in service by the end of the decade. The 10 Boreis were originally planned to be distributed evenly between the Northern and Pacific fleets, but after the Umka-2021 exercise, in which three Boreis surfaced through the Arctic at the same time, the Russian Defense Ministry reportedly decided to prioritize their delivery to the Northern Fleet.

BALLISTIC MISSILE DEFENCE

USA

DoD Wish List Seeks More Funds to Boost Pacific Missile Defense, Weapons Cybersecurity

Should additional money become available on top of the recently released fiscal 2022 budget request, U.S. Indo-Pacific Command and the Missile Defense Agency would like to use it to boost defense against ballistic missile threats in the Pacific, according to a wish list sent to Congress and obtained by Defense News.

INDOPACOM chief Adm. John Aquilino sent a customary unfunded requirements list to Capitol Hill shortly after the release of the FY22 budget request. The wish list contained \$889.94 million worth of projects and programs he'd like to see funded if Congress is able to inject more cash into the budget.

These wish lists are sent to Congress each year to help guide lawmakers as they decide what might require additional funding. The Pentagon usually cautions Congress not to cut items from its base

budget request in favor of items on the lists. The commander's No. 1 priority on the list is more money to develop a ballistic missile defense system for Guam, which would require an additional \$231.7 million — \$77.2 million in procurement funding and \$154.45 million in research, development, test and evaluation funding.

The Missile Defense Agency plans to use \$78.3

million in its FY22 base budget to look at systems that could support the defense of Guam. The money would support detailed threat and requirements analysis, systems engineering, trade studies, and specification updates. Another \$40 million in the request would procure long-lead items for the Guam defense capability. The architecture to defend Guam could include regional capabilities offered from Aegis Combat System ships and the Terminal High Altitude Area Defense System, or THAAD. They "are all part of

that architecture consideration today, and we're working that hard so that we can come forward and tell you exactly what we're going to do on Guam," Vice Adm. Jon Hill, the MDA's director, said during a June 9 hearing with the Senate Strategic Forces Subcommittee.

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The Army deployed a rotational THAAD presence to Guam in 2014. The architecture, Hill added, would require sensors, a fire control network and defensive weapons. Basing on Guam is critical to America's goal to project its offensive power and deter possible threats in the INDOPACOM theater — and that means the U.S. military must protect the island, Hill said. Developing a dedicated missile defense

capability on Guam would free up Navy ships to return to maneuver forces.

Fourth on the INDOPACOM commander's list is funding for the Homeland Defense Radar-Hawaii, which hasn't received funding in recent years and was excluded from the FY22 budget request. The commander would like \$41 million in RDT&E funding as well as \$19 million in military construction money to support an initial operational capability by FY24. The list notes the ask is in line with National Defense Authorization Act guidance over the last six budget cycles. The HDR-H was listed as an unfunded requirement for FY21 by Indo-Pacific Command. Support has been growing both in Congress and the Pentagon to pursue a Hawaii-based ballistic missile defense radar.

The MDA's modest unfunded requirements list totals \$367.5 million. The agency's budget request is also lower than previous requests at \$8.9 billion. Congress infused its FY21 budget with \$1.3 billion because the body didn't believe the request was enough to meet National Defense Strategy goals. That fear still exists, with Senate Strategic Forces Subcommittee ranking member Sen. Debra Fischer of Nebraska saying at the June 9 hearing: "I am concerned that this level of funding, especially if sustained into the future ... will be insufficient to pace the growing threats facing our nation and we will be left in a precarious situation as a nation."

The MDA wish list includes \$41 million for two more all-up rounds of the SM-3 Block IIA missile, which is critical for advanced ballistic missile defense threats and is launched from Aegis ships. The agency also wants 12 additional THAAD interceptors for a total of \$109.6 million. An

additional \$61.9 million is wanted for hypersonic defense, according to the MDA list, in order to accelerate defensive system development.

The agency requested \$247.9 million in FY22 to develop a glide-phase intercept capability as well as other technologies needed for a future architecture, and to support the acceleration of an operational demonstration of the glide-phase defense capability using the Aegis weapon system. Bolstering cybersecurity for its systems is also included on the wish list. The agency wants \$55 million to improve the cybersecurity of critical infrastructure that supports its Ballistic Missile Defense System and other MDA systems. The agency would like extra funding to upgrade its Navy SPY radar to include improvements in detecting, tracking and the discrimination of advanced threats in more complex environments. "The approach digitizes the radar back end resulting in solid-state radar-like performance," the list stated.

While there is a small amount of funding in the MDA's FY22 request — \$14 million — to address U.S. Northern Command's requirements for cruise missile defense of the homeland to begin development needed for the capability, the wish list contains an additional \$27 million to develop and demonstrate a tower-based fire control sensor for indications and warnings and "potential engagement of cruise missile threat." The tower sensor would also be effective in detecting hypersonic missile threats. The same request in the MDA's wish list is present in U.S. Northern Command's unfunded requirements list. ...

Source: Jen Judson, *Defence News*, <https://www.defensenews.com/pentagon/2021/06/10/>

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dod-desires-more-funding-to-boost-missile-defense-in-the-pacific-in-wish-list-to-congress/, 11 June 2021.

We Opposed US Plans to Deploy Missiles in Neighbouring Countries: Chinese Foreign Minister Wang Yi

China is opposed to US plans to deploy missiles and defensive systems in neighbouring countries that could undermine strategic stability and has called for advancing international arms control, disarmament and non-proliferation processes. Addressing the Conference on Disarmament in Geneva via video link, Chinese Foreign Minister Wang Yi proposed jointly maintaining global strategic stability, abiding by international arms control treaties, addressing the non-proliferation issue via negotiations and improving global security governance in new frontiers. "China opposes the development and deployment of regional and global missile defence systems by a certain country that undermine strategic stability, and China opposes the deployment of land-based intermediate-range ballistic missiles in the neighbourhood of other countries," Wang said.

Though Wang has not named the US, China in the past has threatened to take countermeasures if the US deploys intermediate-range missiles in Asia opposed Washington's move to deploy the high tech THAAD in South Korea over concerns that the American system will monitor China's missile movements. In the text of his address posted on the Chinese Foreign Ministry website, Wang said the five permanent members of the UNSC should reaffirm the important formula that a nuclear war cannot be won and must never be fought, strengthen cooperation in strategic risk reduction and deepen strategic dialogue on a broader range

of strategic security issues to enhance strategic trust.

He said that China is committed to a policy of not using or threatening to use nuclear weapons against non-nuclear-weapon states and nuclear-weapon-free zones unconditionally. Without disclosing the numbers of China's arsenal of nuclear weapons, he called on the US and Russia to reduce their nuclear weapons. "China always keeps its nuclear capabilities at the minimum level required for

national security, and does not compete with any other country in the size or scale of nuclear force," he said. China so far has not disclosed how many warheads it has, but an assessment by the Stockholm International Peace Research Institute put the number at 320, in comparison to Russia's 54,000 or the 70,000 US warheads, the Hong Kong-based South China Morning Post reported. China is also resisting US efforts to include it in the New Strategic Arms Reduction Treaty with Moscow and Washington.

Source: PTI, The New Indian Express, <https://www.newindianexpress.com/world/2021/jun/12/we-opposed-us-plans-to-deploy-missiles-in-neighbouring-countrieschinese-foreign-minister-wang-yi-2315342.html>, 12 June 2021.

Addressing the Conference on Disarmament in Geneva via video link, Chinese Foreign Minister Wang Yi proposed jointly maintaining global strategic stability, abiding by international arms control treaties, addressing the non-proliferation issue via negotiations and improving global security governance in new frontiers.

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EMERGING TECHNOLOGIES AND DETERRENCE

CANADA

Canadian Institute Launches Nuclear Hydrogen Feasibility Study

Work on the study will be led by design, engineering and consultancy company Arcadis, supported by NII and project partners Bruce Power and Greenfield Global. Bruce is a founding member of Ontario-based NII, a not-for-profit

organisation set up in 2018 as a platform for accelerating innovation in the Canadian nuclear industry.

“Hydrogen is poised to play a key role in a net-zero future,” David Campbell, director of NII’s Bruce Power Centre for Next Generation Nuclear, said. “This project will provide a unique exploration of how nuclear power can provide the clean, affordable hydrogen that Ontario will need to continue decarbonizing our economy.”

The new study will continue the Centre for Next Generation Nuclear’s research into the potential for hydrogen production and use in Ontario, and will investigate the viability of a local pilot project to demonstrate the economics of the technology, in preparation for the rapid growth of the hydrogen economy. It aims to explore the “significant benefits” a hydrogen project could bring to the region, including new export opportunities, trade partnerships between local vendors, and the creation of high-paying jobs. The study will also benefit governments “at all levels” as they work on their own hydrogen strategies, the NII said.

The Canadian government last year launched its Hydrogen Strategy for Canada to spur investment and partnerships to establish Canada as a global supplier of hydrogen. That strategy sees low-carbon and zero-emission hydrogen fuel technology as a key part of the nation’s path to net-zero carbon emissions by 2050. Bruce County is “well positioned” to advance the hydrogen economy, the organisations said.

... Bruce Power previously announced a 2021 initiative to evaluate the opportunity for mass production of hydrogen using nuclear technology

and opportunities for alignment with the oil and gas, transportation and electricity generation sectors. Utilising nuclear power generation for clean fuels and transportation, including a national hydrogen and clean fuels strategy, is one of the five pillars in the company’s NZ-2050 strategy to contribute to a net-zero Canada while growing the economy and supporting innovation.

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Source: <https://www.world-nuclear-news.org/Articles/Canadian-institute-launches-nuclear-hydrogen-feasi>, 11 June 2021.

RUSSIA

Rosatom ‘Plans New Nuclear Technology Exports’

The plan aims to build four floating power units using RITM-200 reactors (55 MWe each) by the end of 2028 for the Baim Mining and Refining Plant in Chukotka. It aims to commission the first

The plan aims to build four floating power units using RITM-200 reactors (55 MWe each) by the end of 2028 for the Baim Mining and Refining Plant in Chukotka. It aims to commission the first land-based nuclear power plant, using RITM-200N technology, by the end of 2030, for the Kyuchusskoye gold deposit in Yakutia.

land-based nuclear power plant, using RITM-200N technology, by the end of 2030, for the Kyuchusskoye gold deposit in Yakutia. Also by the end of the decade, the plan expects to launch pilot units called Shelf M (up to 10 MWe) and Elena AM (400 kWe and 5 Gcal/h), in remote regions of the country. Rosatom hopes to conclude the first export contract for its small nuclear power plants at the end of 2026, and for six units by the end of 2030. The only small nuclear power plant that has so far been commissioned in the world is Rosatom’s 70 MWe floating unit Akademik Lomonosov.

The second focus of the plan is the ‘Waste-free Atom’ project for a closed nuclear fuel cycle and the construction of fast neutron reactors. The BREST-300 lead-cooled fast reactor is to start

operations at the end of 2027, according to Kommersant. By the end of the decade, the design documentation for the BN-1200M with sodium coolant will be ready, it added.

The third is 'Pure Atom for the World', which concerns Rosatom's plan to export nuclear fuel for nuclear power plants of non-Russian design. The first contract for this is expected to be signed next year. By the end of 2030, a portfolio of four contracts and the expansion of the supply base by 18 PWR units (TVS-Kvadrat fuel assemblies) is envisaged. According to the article, Rosatom aims for 24% of the global nuclear fuel supply market by 2030, up from 17% currently. ...

Source: <https://world-nuclear-news.org/Articles/Rosatom-plans-new-nuclear-technology-exports>, 11 June 2021.

USA

Nuclear Proposal Incorporates Molten Sodium Technology

After the recent announcement that Wyoming would be getting a nuclear power plant, many Wyomingites had a similar question. Is it safe? The Star-Tribune spoke with an expert who says yes, both the reactor and the waste storage are secure. Wyoming will be the site of the first Natrium small modular reactor (SMR) from a partnership between Bill Gates' company TerraPower, the U.S. Department of Energy and PacifiCorp.

The Natrium SMR has a design distinct from previous reactors, making it safer than traditional reactors. Traditional models have complex safety

systems and rely on human intervention in addition to the built-in mechanisms. The Natrium SMR that Wyoming is getting, however, is simpler and not meant to require human intervention. "The system is walk-away safe. That is, it takes care of itself," said Jacopo Buongiorno, a professor of Nuclear Science and Engineering at the Massachusetts Institute of Technology. "If there is an anomaly, if there is a failure of some component, the

system automatically goes into a safe state and it does so without relying on human operators or external energy sources."

The way the Natrium SMR stores the energy it creates makes it more accident-proof too. The reactor that Wyoming is getting can store energy in molten sodium pools for long periods of time, which makes the reactor much less susceptible to meltdowns. What this means in practice is if the temperature of the reactor increases, the reactor is designed to naturally reduce power early enough that it will have a considerable amount of time to respond to any unusual event before anything dangerous can happen, a TerraPower spokesperson explained.

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When it comes to natural disasters, the Natrium SMR is already at a much lower risk for accidents than older reactors. ... A Fukushima-like event could not happen with the nuclear power plant Wyoming is getting, according to Buongiorno. "For this system, that accident is physically impossible because there are no engineered safety systems that can be disabled by flood.

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systems that can be disabled by flood" he said.

As Wyoming becomes an increasingly wildfire-heavy state, it should be noted that the reactor will be inside a structure and mostly below

ground. It is not yet clear what type of fire-proofing the reactor and the waste storage will have, but the “nuclear-related structures will meet the fire protection criteria defined by the Nuclear Regulatory Commission,” a TerraPower spokesperson said.

And, the company says, even traditional reactors in the U.S. have been proven to be safe. “America’s nuclear reactors have a tremendous record in terms of operating safely, and advanced designs like the Natrium reactor build on that success,” the spokesperson said. There is strict federal oversight on these commercial power plants that is imposed by the Nuclear Regulatory Commission. The regulations and guidance the federal government provides also takes into account the location and environment the power plant will be in.

The radioactive waste from Wyoming’s plant will be stored on site — which is typical for nuclear plants in the United States — until the country identifies a

permanent repository. So how threatening is the waste, or what’s called “spent fuel”? The waste will first be stored in on site pools below meters of water inside of a secure building. The water helps to create a barrier from the radioactivity and helps to cool the waste. The heat and radioactivity in the spent fuel drops by a factor of 10 in the first month, Buongiorno explained. The decay of radioactivity then slows over the next two to three years, at which point the waste is transferred to dry casks. Dry casks are able to exist in open air at the site. What’s more, the Natrium SMR produces significantly less waste per megawatt hour of energy produced than a traditional reactor.

Source: Victoria Eavis Casper, https://www.wyomingnews.com/rocketminer/news/state/expert-reactor-will-be-safe-nuclear-proposal-incorporates-molten-sodium-technology/article_49a2b5de-f743-564a-8ebf-75ca984112eb.html, 14 June 2021.

NUCLEAR ENERGY

BELARUS

First Belarus Reactor in Commercial Operation

Belarusian regulator Gosatomnadzor has issued the full operating licence for Ostrovets 1 so that the country’s first nuclear power station is now cleared for commercial operation. The VVER-1200 reactor of 1109 MWe was connected to the grid in December. A second unit is about a year behind it.

Source: Excerpted from Weekly Digest, World Nuclear Association, 03 June 2021

CANADA

Canadian Prospects for GE Hitachi Small Reactor

GEH commissioned the report and claims that “As the tenth evolution of the boiling water reactor, the BWRX-300 represents the simplest, yet most innovative BWR design since GE began developing nuclear reactors in 1955.”

PwC Canada has produced a major report on the substantial economic benefits of manufacturing, building and operating GE Hitachi BWRX-300 small modular reactors in

Canada for the local market and for export. GEH commissioned the report and claims that “As the tenth evolution of the boiling water reactor, the BWRX-300 represents the simplest, yet most innovative BWR design since GE began developing nuclear reactors in 1955.”

GEH aims to commercialize and manufacture the BWRX-300 in partnership with Ontario Power Generation (OPG). This would involve a local supply chain and possibly the first commercial deployment of a grid-scale SMR in Canada. The collaboration would provide a base for future SMR deployment in Canada and internationally. OPG has been considering the BWRX-300 and two other designs - Terrestrial’s 192 MWe Integral Molten Salt Reactor, and X-energy’s 80 MWe Xe-100 high-temperature reactor - as possible SMRs for its Darlington site.

Source: Excerpted from Weekly Digest, World Nuclear Association, 03 June 2021.

CHINA

New Chinese Reactor in Commercial Operation

After connecting to the grid in May, Tianwan 6 has completed tests and is now in commercial operation. Units 5 & 6 are locally-designed ACPR1000 reactors of 1080 MWe net. Units 7 & 8 at the site will be Russian VVER-1200 units, and the first is under construction.

The ACP100 was identified as a 'key project' in China's 12th Five-Year Plan, and is developed from the larger ACP1000 PWR. The design, which has 57 fuel assemblies and integral steam generators, incorporates passive safety features and will be installed underground.

Source: Excerpted from *Weekly Digest, World Nuclear Association*, 03 June 2021

China Approves Construction of Demonstration SMR

China National Nuclear Power (CNNP) - a subsidiary of China National Nuclear Corporation (CNNC) - announced the approval in a 4 June notice to the Shanghai Stock Exchange. It said the Hainan Changjiang Multi-purpose Small Modular Reactor Technology Demonstration Project is owned by CNNC Hainan Nuclear Power Company, a wholly-owned subsidiary of CNNP, and adopts the Linglong One small nuclear reactor technology of the company's controlling shareholder, CNNC.

South Korea's chance to win a nuclear power plant construction project in the Czech Republic has increased as Russia and China are likely to be ruled out. According to industry insiders, the Czech government recently decided to do so in sending its requests for proposal. South Korea, the United States and France are expected to vie for the project.

"The small reactor demonstration project is of great significance to promote the safe development and independent innovation of nuclear power," CNNP said. It did not say when construction of the demonstration ACP100 is scheduled to begin, nor when it is due to be commissioned.

CNNC announced in July 2019 the launch of a project to construct an ACP100 reactor at Changjiang. Under development since 2010, the ACP100 integrated PWR's preliminary design was completed in 2014. The major components of its

primary coolant circuit are installed within the reactor pressure vessel. In 2016, the design became the first SMR to pass a safety review by the International Atomic Energy Agency.

The ACP100 was identified as a 'key project' in China's 12th Five-Year Plan, and is developed from the larger ACP1000 PWR. The design, which has 57 fuel assemblies and integral steam generators, incorporates passive safety features and

will be installed underground. In 2016, China announced plans to build a demonstration floating nuclear power plant based on the ACP100S variant of the CNNC design.

The demonstration ACP100 plant would be located on the north-west side of the existing Changjiang nuclear power plant, according to a March 2019 announcement from China's Ministry of Environment. The site is already home to two operating CNP600 PWRs, while the construction of the first of two Hualong One units began in March this year. Both those units are due to enter commercial operation by the end of 2026.

Source: <https://world-nuclear-news.org/Articles/Construction-of-demonstration-Chinese-SMR-approved>, 07 June 2021.

CZECH REPUBLIC

Czech Republic to Rule Russia and China Out of Nuclear Power Plant Construction Project

South Korea's chance to win a nuclear power plant construction project in the Czech Republic has increased as Russia and China are likely to be ruled out. According to industry insiders, the Czech government recently decided to do so in sending its requests for proposal. South Korea, the United States and France are expected to vie for the

project. The project is to build a nuclear power plant with a capacity of 1,000 MW to 1,200 MW in Dukovany. The total cost of the project is estimated at eight trillion won. Earlier, Korea Hydro & Nuclear Power formed a consortium with KEPCO E&C, KEPCO Nuclear Fuel, Doosan Heavy Industries & Construction and Daewoo Engineering & Construction in order to compete for the project.

Source: Jung Minhee, Business Korea, <http://www.businesskorea.co.kr/news/articleView.html?idxno=69055>, 08 June 2021.

IRAQ

Iraq Plans Nuclear Power Plants to Tackle Electricity Shortage

Iraq is working on a plan to build nuclear reactors as the electricity-starved petrostate seeks to end the widespread blackouts that have sparked social unrest. OPEC's No. 2 oil producer – already suffering from power shortages and insufficient investment in aging plants – needs to meet an expected 50% jump in demand by the end of the decade. Building atomic plants could help to close the supply gap, though the country will face significant financial and geopolitical challenges in bringing its plan to fruition.

Iraq seeks to build eight reactors capable of producing about 11 gigawatts, said Kamal Hussain Latif, chairman of the Iraqi Radioactive Sources Regulatory Authority. It would seek funding from prospective partners for the \$40 billion plan and pay back the costs over 20 years, he said, adding that the authority had discussed cooperation with Russian and South Korean officials.

Plunging crude prices last year deprived Iraq of funds to maintain and expand its long-neglected

electricity system. The resulting outages triggered protests that threatened to topple the government.

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...Raising financing will be a major task given that Iraq has suffered budgetary crises amid volatile oil prices. Even with crude at about \$70 a barrel now, the country is only just balancing its budget, according to data from the International Monetary Fund. The government will also have to tackle geopolitical concerns

around the safety of atomic energy, which have stymied nuclear ambitions elsewhere in the region.

The Iraqi cabinet is reviewing an agreement with Russia's Rosatom Corp. to cooperate in building reactors, Latif said. South Korean officials this year said they wanted to help build the plants and offered the Iraqis a tour of reactors in the United Arab Emirates run by Korea Electric Power Corp.

Iraq currently boasts 18.4 gigawatts of electricity, including 1.2 gigawatts imported from Iran. Capacity additions mean generation will rise to as much as 22 gigawatts by August, but that's well short of notional demand that stands at almost 28 gigawatts under normal conditions.

Latif said the nuclear authority has also spoken with French and U.S. officials about the plan... Iraq currently boasts 18.4 gigawatts of electricity, including 1.2 gigawatts imported from Iran. Capacity additions mean generation will rise to as much as 22

gigawatts by August, but that's well short of notional demand that stands at almost 28 gigawatts under normal conditions. Peak usage during the torrid months of July and August exceeds 30 gigawatts, according to the Electricity Ministry. Demand will hit 42 gigawatts by 2030, Latif said. ...

Source: Excerpted from Khalid Al-Ansary and Anthony Di Paola, Aljazeera, https://www.aljazeera.com/economy/2021/6/8/iraq-plans-nuclear-power-plants-to-tackle-electricity-shortage?mkt_tok=MDk1LVBQVi04MTMAAA F9jEvke4uOdjYxdSTXEOS-rTihkoNev TQjpyfxsNe 64Ebr4W-8jeicP0qhshissYkn7W9Sxwx7jw

RB5hi8MvXeZmj9w1zEeDAhxWdhKV4THxwbw,
08 June 2021.

USA

US Budget Application Includes Strong Provision for Nuclear Energy

The Administration's budget request for the Department of Energy in FY22 totals \$46.2 billion, with a "record" \$1.85 billion for the Office of Nuclear Energy. This includes over \$370 million for the Advanced Reactor Demonstration Programme which aims to build advanced reactors within the next six years, cost-shared with developers. Two thirds of this is to demonstrate two advanced reactor technologies, one developed by X-energy and the second by TerraPower.

The two companies received \$80 million each from DOE last year, as part of a multi-year \$3.2 billion program to build two advanced reactors that can be operational by about 2026. TerraPower has just announced plans to build a 345 MWe demonstration Sodium fast reactor unit with heat storage in Wyoming. This is essentially a GE Hitachi PRISM design based on substantial US experience. X-energy's 80 MWe Xe-100 high-temperature pebble bed reactor, also with significant antecedents, is the other type.

The budget request also includes \$145 million for the Versatile Test Reactor Project, which aims to provide fast neutron testing capability to aid US development of advanced nuclear reactor technology. Both these represent very large increases from FY21. The Fuel Cycle Research and Development program includes \$368.5 million for advanced fuel cycle technologies including "high-assay low-enriched uranium for civilian domestic use". It also aims to lay the groundwork for the

This includes over \$370 million for the Advanced Reactor Demonstration Programme which aims to build advanced reactors within the next six years, cost-shared with developers. Two thirds of this is to demonstrate two advanced reactor technologies, one developed by X-energy and the second by TerraPower.

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development of a consent-based siting process to support consolidated interim storage for used nuclear fuel and high-level radioactive waste.

In addition to the civil nuclear energy programs, the Pentagon has requested \$60 million to fund Project Pele, a program for building a transportable nuclear microreactor (under 5 MWe) to deliver high-output, resilient electric power for Defense Department missions.

Source: Excerpted from Weekly Digest, World Nuclear Association, 02

June 2021

URANIUM PRODUCTION

GENERAL

Uranium Production to Recover in 2021 after Years of Limited Growth

Global uranium production is expected to recover by 3.1% to reach 51.2kt in 2021 due to the return of production at Cigar Lake in Canada and other mines suspended during 2020, says Globaldata, a UK-based data and analytics company. According to the firm's latest report, output growth from Kazakhstan (+15.5%) and Russia (+5.2%) will contribute significantly to the overall growth. In contrast, production will continue to decline in Australia (-21.2%) due to the closure of the Ranger mine.

"Global uranium production has been limited in recent years, mainly due to a sluggish market," says Vinneth Bajaj, associate project manager at

GlobalData. "This was further impacted by the covid-19 pandemic from early 2020. In fact, global production of uranium fell by 9.2% to 49.7kt in 2020. The most significant declines were observed in Canada (43.9%) and Kazakhstan (14.6%) – globally, almost 60% of uranium originates from these two countries," Bajaj adds.

In March 2020, Canada's Cigar Lake mine, which accounts for 12-13% of global production, was suspended to contain the outbreak. The suspension stayed in place until September 2020, but was later halted again in mid-December 2020 because of the increasing risks. It reopened in April 2021.

In April 2020, Kazakhstan reduced activities for nearly four months at all uranium mines across the country. The pandemic also led to restrictions in other countries, including Australia, Namibia and South Africa. Gradually, however, restrictions began to ease towards the end of the third quarter, with several companies resuming production activities. Looking forward, GlobalData estimates uranium production worldwide is expected to grow at a compound annual growth rate (CAGR) of 6.2% over the forecast period (2021–2025) to reach 65.2kt in 2025.

"Kazakhstan, which holds some of the world's largest uranium deposits, is expected to remain the world's largest supplier for the next few years. With potential open pit uranium mines, Namibia is also expected to remain a prominent supplier of uranium to the global markets. Furthermore, the restart of Cigar Lake in April 2021 is expected to provide a much-needed boost to Canada's uranium supply" Bajaj says.

The impact of the covid-19 pandemic on the global nuclear industry was relatively minimal because of an early implementation of safety measures. "These actions enabled companies to effectively manage their workforce and resources required to keep operations running," Bajaj notes. "The refuelling of reactors normally takes place in every 12 to 18 months (unlike conventional fossil fuel plants that require constant supply), even when

strict social restrictions are in place. Meanwhile, planned outages and expansion works at many reactors were delayed during early 2020 and, instead, companies focused on electricity generation anticipating higher demand later in 2020."

There has been recent optimism surrounding the global nuclear industry, with several governments incorporating nuclear energy within their plans for reaching climate goals. The US is currently evaluating extending the operating life of its nuclear power plants for up to 100 years. The plants were initially licensed for up to 40 years, but this would permit renewals for up to 20 years with every renewal application. Other countries such as China, Japan and South Korea, as well as the EU, all upgraded their climate change policies during 2020, indicating higher demand for nuclear power going forward — alongside higher electricity generated from sources other than coal.

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The US is currently evaluating extending the operating life of its nuclear power plants for up to 100 years. The plants were initially licensed for up to 40 years, but this would permit renewals for up to 20 years with every renewal application.

Source: <https://www.mining.com/uranium-production-to-recover-in-2021-after-years-of-limited-growth-report/>, 07 June 2021.

NUCLEAR PROLIFERATION

IRAN

UN Nuclear Watchdog Says Iran has Failed to Account for Uranium Find

The head of the UN nuclear watchdog said that Iran has failed to answer questions about the discovery of uranium particles at former undeclared sites in the country, and called on Tehran to provide information. Rafael Grossi, the head of the IAEA, has been pushing Iran for answers on three sites where inspections had revealed traces of uranium of man-made origin,

suggesting they were once connected to Iran's nuclear programme. The issue is separate from the ongoing negotiations aimed at bringing the United States back into Iran's 2015 nuclear accord with world powers.

Grossi said in March that Iran had agreed to sit down with international technical experts investigating the discovery, and said he hoped to this would have happened by the time of the IAEA board meeting in June. But in comments to the IAEA's board of governors, Grossi said "as we speak we haven't had any concrete progress on any of the issues." He said Iran also hasn't answered questions regarding another undeclared location.

Source: Iran International, <https://iranintl.com/en/iran-in-brief/un-nuclear-watchdog-says-iran-has-failed-account-uranium-find>, 07 June 2021.

NORTH KOREA

UN Nuclear Watchdog Sees Indications of Plutonium Work in North Korea

The U.N. atomic watchdog has seen indications in North Korea of possible reprocessing work to separate plutonium from spent reactor fuel that could be used in nuclear weapons, the head of the agency said. The IAEA has not had access to the secretive state since Pyongyang expelled its inspectors in 2009. The country then pressed ahead with its nuclear weapons programme and soon resumed nuclear testing. Its last detonation of a nuclear weapon was in 2017. The Vienna-based IAEA now monitors North Korean activities at sites including the main nuclear complex at Yongbyon from afar, mainly using satellite imagery.

In a quarterly update to a meeting of his agency's 35-nation Board of Governors, IAEA Director

General Rafael Grossi said steam had continued to emerge from a plant serving a reprocessing lab at Pyongyang since he reported it billowing at the last meeting. "The steam plant that serves the Radiochemical Laboratory has continued to operate since my last Statement to the Board in March," he said in the text of a speech. "The duration of this operation is consistent with the time required for a reprocessing campaign at the Radiochemical Laboratory. It is not, however, possible to confirm that reprocessing is taking place," he added.

There was no indication in the past three months of operations at North Korea's main, 5-megawatt reactor at Yongbyon that is widely believed to have produced plutonium for weapons. The IAEA has previously said it has probably been shut down since December 2018. There was also no indication that a Yongbyon facility thought to be an enrichment plant had been in operation, he added, and internal construction work at an experimental light-water reactor there appeared to continue. Grossi added, however, that there were "ongoing indications of activity" at a facility just outside Pyongyang called Kangson, which has attracted attention as a potential enrichment site.

Source: Francois Murphy, Reuters, <https://www.reuters.com/world/asia-pacific/un-nuclear-watchdog-sees-indications-plutonium-work-north-korea-2021-06-07/>, 07 June 2021.

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NUCLEAR DISARMAMENT

USA-RUSSIA

Biden Urged to Bring Missile Defense Reductions to Putin Summit

Ahead of President Joe Biden's summit with Russian President Vladimir Putin this month, more

than 60 advocates, former military officers, lawmakers and government officials are asking Biden to put missile defense reductions on the agenda. The letter targets, for one, the Ground-based Midcourse Defense system, which saw a plan to upgrade its interceptors cancelled amid technical problems in 2019. Since, Lockheed Martin and Northrop Grumman were selected to compete for a next-generation interceptor to be fielded in 2028, and the Missile Defense Agency's FY22 budget request included \$926.1 million for the program.

But advocates see a potential off-ramp from a burgeoning arms race. "This presents an opportunity to halt the current arms race between U.S. missile defense systems and new offensive systems being built by Russia and China to overcome U.S. defenses," they wrote in a letter to Biden.

Since the U.S. withdrew from the Anti-Ballistic Missile Treaty in 2002 – a move Biden opposed as a senator – "the GMD system has proceeded in a rushed, chaotic and ultimately counter-productive manner that has resulted in a failed test record, wasted billions of dollars, and accelerated an arms race with Russia and China, leading both adversaries to expand their offensive nuclear weapons programs to counter U.S. missile defenses," the letter reads.

Notable signatories include former Defense Secretary Bill Perry; Obama-era Deputy National Security Advisor Ben Rhodes; former Assistant Secretary of State for International Security and Nonproliferation Thomas Countryman – and several former lawmakers who served with Biden in the Senate, including Tom Harkin and former Senate Majority Leader Tom Daschle.

The Council for a Livable World organized and

released the letter. The signatories argue the Navy's successful test interception last year of a SM-3 Block IIA missile against an intercontinental ballistic missile, from a ballistic missile defense-capable destroyer at sea, "has threatened Russia's and China's confidence in their strategic deterrent."

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proposal included \$1 billion for the Lockheed-made Aegis BMD and \$647 million for the sea-based interceptors.

The letter flags a 2001 speech from then-Senate Foreign Relations Committee Chairman Biden that blasted the absurdity of a "theological allegiance to missile defense" in Washington. "You were right then, and you have the power to walk us back from the brink now," the letter reads.

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They urge Biden to delay new work on the Navy Aegis Ballistic Missile Defense system by capping production of the Aegis SM-3 Block IIA interceptors and BMD-capable vessels, "as a first step to restoring strategic stability and stopping a nuclear arms race." The Biden budget

proposal appears headed in the opposite direction is unclear, but Republicans in

Congress and perhaps some Democrats would likely oppose it, according to Rebecca Heinrichs, a missile defense analyst at the Hudson Institute.

Heinrichs argued that there's nothing provocative about building a defensive system, meant to focus on threats from rogue states like North Korea. "It makes no sense to put on hold the U.S. homeland missile defense system to try to please Putin when the immediate effect would be to leave Americans exposed to Kim Jong-Un's always-improving missiles," she said. "The argument to drop our defenses to placate our enemies by giving them a wider open shot at us has always been

foolish, but it's hard to overstate the madness of making that argument at a time like now when the result is to give Pyongyang that wide open shot."

Source: Joe Gould, Defence News, <https://www.defensenews.com/congress/budget/2021/06/03/biden-urged-to-bring-missile-defense-reductions-to-putin-summit/>, 03 June 2021.

Framatome, the French firm that partly owns the plant in Guangdong province, confirmed that it had been informed of a build-up of inert gases at the plant and had called a meeting with its Chinese partner to review the data.

The letter allegedly included an accusation from the French side that the Chinese safety authority was raising the acceptable limits for radiation detection outside the Taishan plant in order to

avoid having to shut it down. The operator of the power station, the state-owned China General Nuclear Power Group, said in a statement on 13 June evening that "the environmental indicators of Taishan Nuclear Power Plant and its surroundings are normal". It did not refer to any leak or incident at the power station, which it said meets "the requirements of nuclear safety regulations and power plant technical specifications".

Source: Stuti Mishra, <https://in.news.yahoo.com/china-nuclear-plant-leak-us-120055215.html?guccounter=1>, 14 June 2021.

NUCLEAR SAFETY

CHINA

China Nuclear Plant 'Leak': US Investigates Report of 'Imminent Radiological Threat' at Taishan Facility

The US says it is assessing reports of a leak at China's Taishan nuclear power plant, after a French company requested support in tackling an "imminent radiological threat". Framatome, the French firm that partly owns the plant in Guangdong province, confirmed that it had been informed of a build-up of inert gases at the plant and had called a meeting with its Chinese partner to review the data.

The company said in a statement that it was "supporting a resolution of a performance issue" at the plant. "According to the data available, the plant is operating within the safety parameters," the company said. "Our team is working with relevant experts to assess the situation and propose solutions to address any potential issue."

A CNN report cited a letter from Framatome to the US Energy Department raising the alarm and requesting international support. The Biden administration has reportedly concluded that the situation at the plant isn't yet at "crisis level" and does not pose an immediate danger to the workers in the plant or the people around it.

The operator of the power station, the state-owned China General Nuclear Power Group, said in a statement on 13 June evening that "the environmental indicators of Taishan Nuclear Power Plant and its surroundings are normal". It did not refer to any leak or incident at the power station, which it said meets "the requirements of nuclear safety regulations and power plant technical specifications.

French Nuclear Firm Trying to Fix 'Performance Issue' at China Plant

A French nuclear company has said it is working to resolve a "performance issue" at a plant it part-owns in China's southern Guangdong province after an earlier report of a potential leak there.

Framatome, a subsidiary of the energy giant EDF, told Agence France-Presse news agency that it was "supporting resolution of a performance issue" at the plant. "According to the data available, the plant is operating within the safety parameters," it said, adding that an extraordinary

meeting of the power plant's board had been called "to present all the data and the necessary decisions". The statement came shortly after the US TV network CNN reported that Framatome had previously warned the US energy department of an "imminent radiological threat" in a letter.

According to CNN, the letter included an accusation that the Chinese safety authority was

“raising the acceptable limits for radiation detection outside the Taishan nuclear power plant in Guangdong province in order to avoid having to shut it down”. China’s state-run China General Nuclear Power Group said that operations at its nuclear power station in south China met safety rules and the surrounding environment was safe. A US official told CNN “the Biden administration believes the facility is not yet at ‘crisis level’”. EDF later said there was an “increase in the concentration of certain noble gases in the primary circuit of reactor No 1” at Taishan, referring to a part of the cooling system.

Noble gases are elements like argon, helium and neon, which have low chemical reactivity. Their presence in the system “is a known phenomenon, studied and provided for in the reactor operating procedures”, EDF said. Radiation levels in Hong Kong, 85 miles from the Taishan plant, were normal on Monday (14 June), according to the Hong Kong Observatory, which monitors radiation around the city. ...

Source: Vincent Ni, <https://www.theguardian.com/world/2021/jun/14/french-nuclear-firm-trying-to-fix-performance-issue-at-china-plant>, 14 June 2021.

KENYA

IAEA Reviews Progress of Kenya’s Nuclear Infrastructure Development

Kenya has made progress in implementing the recommendations of an earlier IAEA nuclear infrastructure review mission, a team of IAEA and international experts said. Kenya, which has Africa’s seventh-largest economy and a population

of 52 million people, is considering the introduction of nuclear power to help meet its growing energy demand. The Kenyan Ministry of Energy has proposed the potential use of nuclear energy for power generation. In 2019, the Kenya Nuclear Electricity Board (KNEB) transitioned to the Kenya Nuclear Power and Energy Agency (NuPEA) to undertake preparations for the development of a nuclear power programme.

The follow-up Integrated Nuclear Infrastructure Review (INIR) mission took place from 8 to 11 June 2021. It assessed the country’s progress on recommendations from an INIR mission conducted in 2015. It also provided an opportunity to exchange information on the way ahead and clarify outstanding issues. ...

The 2021 follow-up mission was organized in a hybrid format with two IAEA experts travelling to Kenya and two international experts from Ireland and Spain participating virtually. The follow-up INIR team said that Kenya had made progress in the implementation of most recommendations and suggestions from the 2015 review, completing ten and four, respectively.

Source: <https://www.iaea.org/newscenter/pressreleases/iaea-reviews-progress-of-kenyas-nuclear-infrastructure-development>, 11 June 2021.

UKRAINE–NORWAY

Ukraine, Norway Sign Memorandum on Nuclear Safety Cooperation

Ukrainian Energy Minister Herman Halushchenko has signed a memorandum on cooperation in the field of nuclear safety with the Norwegian Ministry of Foreign Affairs. This was reported in a

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statement posted on the Ukrainian government's portal on June 8, 2021. The document was signed during a meeting of the Ukrainian side with Ambassador Extraordinary and Plenipotentiary of the Kingdom of Norway to Ukraine Erik Svedahl. The memorandum provides for the creation of a bilateral ad hoc group on nuclear security, nuclear safety and emergency preparedness.

The issue of energy safety is key for Ukraine. Sustainable energy development and reduction of the carbon footprint in the production of thermal electricity, synchronization of the Ukrainian energy system with ENTSO-E, transformation of coal regions – these are the issues we are working on now.

A number of other issues in the energy sector were also discussed at the meeting. "The issue of energy safety is key for Ukraine. Sustainable energy development and reduction of the carbon footprint in the production of thermal electricity, synchronization of the Ukrainian energy system with ENTSO-E, transformation of coal regions – these are the issues we are working on now" the press service quoted Halushchenko as saying....

Source: excerpted from UAZMI, <https://uazmi.com/news/post/gWL0LXm7Inr89o91Pbtec2>, 09 June 2021.

NUCLEAR WASTE MANAGEMENT

FINLAND

Finland Breaks Ground on Deep Geological Nuclear Waste Repository

The Finnish nuclear waste management company Posiva Oy announced in May the start of excavation on its deep geological nuclear waste repository for spent nuclear fuel at ONKALO. The process has been certified by the Radiation and Nuclear Safety Authority of Finland. Operation of the repository is expected to begin in 2023. The total cost estimate is about €2.6 billion. Posiva will pack used fuel inside copper-steel canisters at the above-ground encapsulation plant, from where they will be transferred into the underground tunnels of the repository. The repository is in 2 billion-year-old igneous Finnish

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bedrock.

About 100 deposition tunnels will be excavated during the 100-year operational period. The repository will have a total length of 35 km, with each tunnel being about 4.5 m high, 3.5 m wide, and 350 m long. Each tunnel will hold around 30 canisters. The repository will be the first in the world to start final disposal of spent nuclear fuel.

Source: David Flin, The Energy Industry Times, <https://teitimes.com/post/finland-breaks-ground-on-deep-geological-nuclear-waste-repository>, 01 June 2021.

FRANCE

French Technologies Can Solve Nuclear Waste Problem, Says French Ambassador

S. Korea and France have opportunities for cooperation on nuclear power, French Ambassador to Korea Philippe Lefort said during an online press conference. At the event, Lefort highlighted France's strategies to address eco-friendly use of nuclear energy and said that it was a suitable time to discuss related issues in light of nuclear energy and climate change challenges the world faces.

Referring to a recent report by the European Commission's Joint Research Center, Lefort said that there was no scientific evidence that shows nuclear energy is

more hazardous to health and environment than other power generation technologies included in the EU taxonomy for sustainable activities. French technologies can solve nuclear waste issues, he said. The envoy spoke about spent nuclear fuel reprocessing and mentioned the La Hague plant in France that extracts plutonium and converts it into mixed oxide fuel. "Ten percent of the

electricity produced by nuclear power comes from recycling in France. After treatment, the final residue is sealed with a high-strength packaging material, which reduces the volume by five times and the toxicity by 10 times.”

A move to reprocessing would involve diplomacy beyond bilateral relations, however. A pact with the US bars Korea from reprocessing spent fuel for security reasons. ...At the event, Cha Seung-soo, the President of Korea Radioactive Waste Agency, or KORAD, hinted at opportunities for cooperation between Korea and France in Seoul's decommissioning of nuclear power plants. “The Korean government is formulating a plan for a high-level radioactive waste treatment plant, and the experience of France can be used as a very valuable experience for us as well,” Cha said.

Since the establishment of KORAD in 2009, the agency has maintained close technical exchange and cooperation with French companies and currently it is operating a low and intermediate level radioactive waste in Gyeongju, North Gyeongsang Province. KORAD is conducting a comprehensive vision of 2030 to secure the safety of radioactive waste management based on public trust.

Source: Sanjay Kumar, <http://www.koreaherald.com/view.php?ud=20210603000875>, 03 June 2021.

GERMANY–FRANCE

German Nuclear Waste to Remain in France after Years of Talks

Germany and France have agreed that 152 containers of nuclear waste from Germany are to be treated in La Hague in northwestern France, while only three to five containers will return to Germany as the country is contractually obligated to take back its nuclear waste reprocessed abroad.

According to a joint information paper by German economy and environment ministries, three to five

containers with highly radioactive nuclear waste are to be returned from La Hague in France to the interim storage facility in the southwestern German state of Baden-Württemberg by 2024.

The agreement also foresees financial compensation for France and for 30 empty containers to also be stored in Germany, which would make the radioactivity levels equal. The amount of compensation to be paid is unclear, however. The process took so long to finalise due to “technical difficulties”, the ministries explained.

“[The government] needs to be transparent regarding compensation payments and the effects on interim and final storage of the nuclear waste,” Green MP Sylvia Kotting-Uhl told

German news agency DPA on Wednesday (9 June). Germany is also obligated to take back nuclear waste currently stored in Sellafield in the UK.

Source: Nikolaus J. Kurmayer, https://www.euractiv.com/section/politics/short_news/german-nuclear-waste-to-remain-in-france-after-years-of-talks/, 10 June 2021.

USA

More Than 1 Million Gallons of Radioactive Waste Handled at Savannah River Site Facility

More than 1 million gallons of radioactive waste have been handled and processed at the Salt Waste Processing Facility at the Savannah River Site, after the workhorse plant was given the green light months ago. The Department of Energy's nuclear cleanup office, Environmental Management, announced the achievement. The first batch of radioactive waste was transferred to the Salt Waste Processing Facility in October 2020, a major milestone after nearly two decades of broader work.

The Salt Waste Processing Facility – designed, built, commissioned and operated in the short term by Virginia-based Parsons – has been billed as the Savannah River Site's cleanup keystone. With it online, nearly all of the hazardous salt

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waste stored at the site south of Aiken is expected to be processed by 2031. Salt waste occupies a majority of tank space at the Savannah River Site, where plutonium for nuclear weapons was once produced.

"The success of SWPF to date enables the department to begin planning for closing the remaining SRS waste tanks at an unprecedented rate," said Jim Folk, the assistant manager for

waste disposition at the site. The facility, Folk noted, has performed largely as expected. There have been hiccups and hurdles, though. ...

Source: https://www.postandcourier.com/aikenstandard/news/savannah-river-site/more-than-1-million-gallons-of-radioactive-waste-handled-at-savannah-river-site-facility/article_88b33d30-c927-11eb-af5d-33d51194ac18.html, 09 June 2021.



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P-284

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