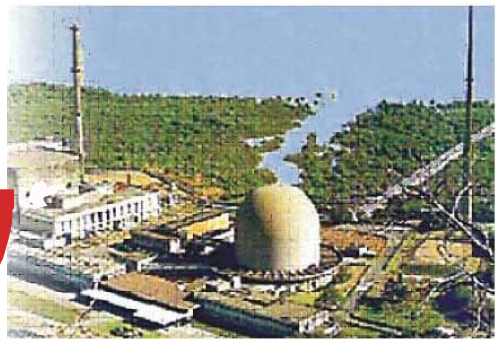
NUCLEAR SECURITY



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

Vol 17, No. 17, 01 JULY 2023

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OPINION – Manpreet Sethi

Envisioning Nuclear Arms Control in Challenging Times

On February 21, as Russia marked one year of its "special military operations" in Ukraine, President Putin announced the suspension of Russia's participation in the USA-Russia New START treaty. He stated that its resumption was only possible if the U.S. "cut off support for Ukraine and bring France and the UK into arms control talks." Describing the Russian action as "legally invalid," the U.S. announced "countermeasures" on June 1. As a result, bilateral data exchanges, notifications and inspections remain in abeyance. No negotiations are in sight to extend the treaty, which is set to expire in 2026. The era of bilateral nuclear arms control, as the world has known it, will come to an end with the expiration of this treaty.

Reviving the process to create other similar instruments appears exceedingly difficult. This is not only because of the current low in U.S.-Russia relations, but also because both sides believe that future nuclear arms control (NAC) can no longer be a bilateral affair. Russia wants the inclusion of the U.K. and France, while the U.S. wants China's involvement. These countries, however, are reticent.

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China, in fact, is suspicious of NAC and is not convinced of the desirability of strategic stability. It believes that instability and unpredictability enhance deterrence. Hence, there is no shared interest in NAC, as there once was between Washington and Moscow after the Cuban missile crisis of 1962. Not only do the nuclear weapon states (NWS) lack consensus on NAC, but further complications arise from the presence of four nuclear-armed states that are not members of the NPT. These states, nevertheless, are part of adversarial dyads with the "recognized" NWS.

The matrix gets more complex given the lack of nuclear parity between adversaries. In the past, a rough military equivalence between the U.S. and the USSR/Russia had made NAC based on ceilings or cuts in numbers a feasible proposition.

But today, the nine nuclear possessors face force asymmetries of many kinds – nuclear, conventional, as well as in emerging domains such as hypersonic missiles, artificial intelligence-enabled autonomous systems and cyberwarfare. The perceived potential implications of these new technologies on nuclear deterrence make NAC a complicated affair. In fact, as nations build military capabilities to hedge against future uncertainties, they create new security dilemmas and generate suspicions based on worst-case assumptions about the intentions of other states.

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To break free from this cycle of challenges, it is imperative for nations to reach a consensus on some revised nuclear "rules of the road" that accommodate the evolving geopolitical, technological and nuclear environment. However, asymmetries in capability and deterrence practices will likely not allow nations to undertake meaningful NAC without preceding confidence-building or restoration measures. Dialogues to share concerns and understand perspectives on competitive relationships will have to be the starting point.

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One way to set the stage for these dialogues could be embracing the prevention of nuclear use as a shared goal in a joint statement. It is worth recalling that the foundational statement made by Reagan and Gorbachev in the late 1980s that nuclear war cannot be won and should not be fought played a significant role in facilitating bilateral NAC.

However, it is important to note that when this statement was made, the two nuclear nations were referring to a full-scale strategic war. That context has today changed for two reasons. Firstly, because the dangerous perception of "limited" nuclear wars as "winnable" propositions in regional contingencies has gained currency in nuclear discourse. This perception could tempt nuclear use. Such a possibility was somewhat recognized in the G20 Bali Leaders' Declaration in November 2022 with the statement that "the use or threat of use of nuclear weapons is inadmissible."

A second, equally worrisome trend is that more nuclear possessors are leaning towards brinkmanship behavior and ambiguous postures for deterrence. Consequently, the risk of inadvertent nuclear war is higher than deliberate nuclear use. This risk also needs to be captured in a commitment by states that "the use, intentional or inadvertent, or threat of use is inadmissible." Such an overarching pronouncement would bring attention to actions at the strategic and operational levels, as well as those pertaining to the safety and security of nuclear arsenals, to ensure the non-use of nuclear weapons.

The upcoming NPT preparatory committee meeting in August of this year could be a good place for NWS to make such a commitment. The four non-NPT members could also support it from the outside. Such an action would help mellow frayed tempers of nuclear possessors, and help build

bridges with the non-nuclear weapon states. It could also create conditions for future NAC which will have to consider new forms, new content, and new actors.

Source: https://koreatimes.co.kr/www/opinon/2023/06/197_352405.html?utm_source=go, 07 June 2023.

OPINION – Igor Ilyash

With Russian Nukes in Belarus, Lukashenka's Balancing Act is Over

The placement of tactical warheads in Belarus puts Lukashenka's political fate in Putin's hands. "There won't be any hesitation." These were the words of Alexander Lukashenka on the possibility of Belarus using nuclear weapons last week. Russian tactical nuclear weapons have reportedly already been moved into Belarus, according to separate statements by both Lukashenka and Putin. "God forbid I'll have to take the decision to use these weapons today," Lukashenka said on 13 June. "But there won't be any hesitation if there's aggression against us."

Ukraine intelligence chief Budanov has since claimed that 'no warheads' have yet arrived in Belarus, but that the country's warhead storage facilities are being prepared. The arrival, real or otherwise, of Russian nuclear weapons in Belarus was meant to be a victory for Lukashenka.

Ukraine intelligence chief Budanov has since claimed that 'no warheads' have yet arrived in Belarus, but that the country's warhead storage facilities are being prepared. The arrival, real or otherwise, of Russian nuclear weapons in Belarus was meant to be a victory for Lukashenka. He has been trying to convince Belarusians that the decision will strengthen Belarusian security, as the West is accused of trying to take control of the country and Ukraine of threatening to attack it. But in reality, the transfer of Russian nukes is likely driving a difficult process for Lukashenka: the Russian security establishment taking increasing control of Belarus under cover of its war against Ukraine.

Saving Face: Lukashenka first announced he was ready to offer Putin the option of moving nuclear weapons into Belarus in the autumn of 2021. Nuclear weapons are an old dream of Lukashenka's. Long before Russia's full-scale invasion of Ukraine, he repeatedly expressed regret that Soviet warheads had been withdrawn from Belarus in the 1990s, calling this decision "a cruel mistake". Lukashenka saw weapons of mass destruction as a trump card that would finally force the international community to take him seriously. "If we had these weapons, they would be talking to us differently," he said back in 2010. His sense of embattlement has only grown since the mass protests that directly challenged his hold on power in 2020.

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But for Lukashenka to benefit from the decision to station nuclear weapons in Belarus, the decision would have to have made Belarus look like an equal partner. Instead, it made Belarus look like a Kremlin satellite, or even just a controlled territory. On 25 March, Putin announced his intention to deploy tactical nuclear weapons in Belarus, but said they would remain under Russian, not Belarusian, control. The Belarusian authorities do not seem to have been ready for the announcement – Lukashenka didn't comment on it publicly for six days. He broke his silence on 31 March, during his annual address to the National Assembly of Belarus. Lukashenka explained the move by claiming that the West was allegedly preparing to attack Belarus. But he differed from Putin in saying that Minsk would be given control of the warheads.

"This is our weapon," Lukashenka stressed. "Now

do you believe that we will strike back? We will strike back to the fullest!" Lukashenka even tried to seize the initiative on the issue of nuclear blackmail from the Kremlin. He said he had ordered the immediate restoration of sites for the launch of the Topol-M intercontinental strategic missiles that were supposed to have been dismantled in the 1990s. (Strategic weapons are more powerful than tactical ones.) "If need be, Putin and I will decide and introduce strategic nuclear weapons," Lukashenka promised. "And they must understand this, the scoundrels who are abroad and are trying to blow us up from within and without. We will stop at nothing to defend our countries, our states and our peoples."

Indeed, with Russian nuclear weapons in Belarus, Lukashenka has lost any chance of distancing himself from the Kremlin in the event of Russia's defeat. Sure enough, while the Ukrainian government once took a careful position on Belarus, it has now made a clear decision about which side the Lukashenka regime is on.

'Perhaps... I'll Find Out': *The Kremlin finished formalising its 'nuclear arrangement' with Belarus in late spring. Russian defence minister Sergei Shoigu arrived in Minsk on 25 May and, alongside his Belarusian counterpart Viktor Khrenin, signed documents regarding the storage of tactical nuclear weapons in a special facility. Lukashenka, meanwhile, was in Moscow, at the Eurasian Economic Union summit. The previous day, journalists had noticed a remark by the president of Kazakhstan, Kassym-Jomart Tokayev, about the closeness between Belarus and Russia. "They even share nuclear weapons," Tokayev joked, as Putin and Lukashenka sat on the stage beside him. There is no point worrying about angering Lukashenka if all the important decisions in Belarus are already being made by Putin.*

Immediately after Tokayev's remark, Putin said something to Lukashenka, while sitting next to him, and the pair shook hands. Lukashenka later told journalists the Russian leader said he had recently signed a decree on the deployment of tactical nuclear weapons in Belarus. Lukashenka was informed after the fact, in passing, like this was a minor event. Even stranger remarks were made by Lukashenka the next day, when he was asked: "Are [nuclear weapons] already in Belarus?" Lukashenka replied: "Perhaps. When I arrive, I'll find out." It seems it was no coincidence that the announcement was so disrespectful to the sovereignty of Belarus: Putin wanted to deprive Lukashenka of the chance to earn political points.

In the West, the Kremlin's nuclear blackmail does not seem to have worked. The EU did call Moscow's actions a "threat to to European security", but the international reaction to the deployment of Russian nuclear weapons in Belarus has been quite calm: the prevailing belief is that the deployment of tactical nuclear weapons in Belarus actually changes nothing. Indeed, with Russian nuclear weapons in Belarus, Lukashenka has lost any chance of distancing himself from the Kremlin in the event of Russia's defeat. Sure enough, while the Ukrainian government once took a careful position on Belarus, it has now made a clear decision about which side the Lukashenka regime is on. Officials have started meeting the opposition in exile, introduced sanctions against Belarus, and recalled diplomats. The logic of the Zelenskyi administration is simple: there is no point worrying about angering Lukashenka if all the important decisions in Belarus are already being made by Putin.

Nuclear Weapons and the Nuclear Electorate: These events could also have significant consequences inside Belarus, but they are unlikely to manifest themselves in the near future. According to a Chatham House poll, the percentage of the Belarusian urban population opposed to the deployment of Russian nuclear weapons in Belarus in June 2022 was 80%. The Belarusian authorities, of course, deny that the decision on tactical nuclear weapons could be so unpopular. But in any event, the lack of support is unlikely to frighten Lukashenka.

First, there is nothing to indicate that the arrival of Russian nuclear weapons in Belarus is about to spark an uprising. In contrast to the beginning

of the war, when thousands of people took to the streets in anti-war protests, the news of the transfer of tactical nuclear weapons was received calmly in Belarus – not even solo protests were held. Most people view the arrival of weapons negatively, but won't take risks under conditions of total state terror.

Second, the Lukashenka regime in its current almost totalitarian form is unconcerned about opinions in society. According to opinion polling, the approval rating of the dictatorship in recent years has been consistently around 20% to 25%. The 20% of those surveyed who have a "positive" or "rather positive" attitude towards tactical nuclear weapons are most likely Lukashenka's supporters. These people support a strong government in Belarus, whatever it does – be it mass repression or support for Russian aggression against Ukraine.

It seems that today only the question of Belarus' direct participation in the war is capable of splitting the electorate of the dictatorship – according to a number of studies, between 3% and 11% of the country's inhabitants would support such a decision.

Seemingly, after the post-election protests of 2020, Lukashenka is no longer seeking to expand his electoral support significantly: he is satisfied with a loyal, hardcore minority. This minority, in turn, does not perceive the deployment of nuclear weapons as an existential challenge. It seems that today only the question of Belarus' direct participation in the war is capable of splitting the electorate of the dictatorship – according to a number of studies, between 3% and 11% of the country's inhabitants would support such a decision.

Belarus' total dependence on Russia has already given rise to the phenomenon of double loyalty. Lukashenka's security services have come to place special emphasis on defending Moscow's interests. When protesters are detained, they are sometimes photographed against the backdrop of Z and V symbols and forced to apologise for their actions to the people of Russia, Putin, and Ramzan Kadyrov, the head of the Chechen Republic.

Case of Double Loyalty: Meanwhile, for Lukashenka, it is extremely important that the regime's core electorate sees nuclear weapons as a manifestation of strength rather than weakness. By itself, the placement of tactical nuclear weapons should be a win for Lukashenka in the eyes of his faithful supporters. It should give the Belarusian security forces and regime nomenklatura confidence, convincing them that the regime is secure. When the decision was first announced in public, Lukashenka's belligerent statements were met with thunderous applause every time.

But if Russia deploys tactical nuclear weapons in Belarus of its own volition, then the regime's supporters may wonder who the country's real master is. Belarus' total dependence on Russia has already given rise to the phenomenon of double loyalty. Lukashenka's security services have come to place special emphasis on defending Moscow's interests. When protesters are detained, they are sometimes photographed against the backdrop of Z and V symbols and forced to apologise for their actions to the people of Russia, Putin, and Ramzan Kadyrov, the head of the Chechen Republic. Russian flags and portraits of Putin hang in the offices of some security officials.

An experienced politician, Lukashenka understands that this kind of dual loyalty represents a risk: in the end, the Belarusian security forces and nomenklatura could conclude that it is enough to be loyal only to Moscow. Therefore, over the past year, Lukashenka has had to explain to his entourage more than once that he is still running the country, not Putin. By showing that the deployment of tactical nuclear weapons in Belarus does not depend on Lukashenka, the Kremlin has struck at the regime's weakest point – it makes the security forces and the Belarusian

nomenklatura doubt the independence and autonomy of their leader.

Source: https://www.opendemocracy.net/en/odr/russia-nuclear-weapons-belarus-lukashenka-putin-ukraine/, 21 June 2023.

OPINION – Robert Soofer

Before Embarking on Arms Control Talks, Biden Needs a Nuclear Deal with Congress

Arms control is entering its most uncertain period in decades. New START is set to expire in February 2026, and the ongoing war in Ukraine complicates any US-Russia negotiations toward a new agreement. Meanwhile, China could have 1,500 nuclear weapons by 2035 and has shown no real inclination to discuss limits. The Biden administration has said it will "engage in bilateral arms control discussions with Russia and with China without preconditions," as US National Security Advisor Jake Sullivan explained in a speech on June 2. However, there is a precondition the US side should set with itself before any bilateral agreement moves forward.

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The White House and Congress currently disagree over the type and number of nuclear weapons required to deter nuclear-armed adversaries in the coming decade, including Russia and China, but also North Korea and potentially Iran. As long as this disagreement persists, it casts doubt on the viability of whatever the administration might agree to in bilateral talks—in particular, whether any new treaty could be ratified or survive a change in administrations. However, a bargain is available that bridges these differences, and it would strengthen the president's hand in arms control negotiations, if the administration and Congress seize the opportunity.

2010 Plans Do Not Address 2030 Threats: In his June 2 speech at the Arms Control Association annual forum, Sullivan called attention to the growing threats posed by China, Russia, North Korea, and Iran. In doing so, he reaffirmed the warnings in the Biden administration's National Defense Strategy and Nuclear Posture Review that as it approaches 2030, "the USA will need to deter two near-peer nuclear powers for the first time in its history." To address this emerging challenge, the White House is continuing the nuclear modernization program begun by the Obama administration and reaffirmed by the Trump administration, though the Biden administration has canceled the development and deployment of a nuclear sea-launched cruise missile (SLCM-N) proposed in the 2019 Nuclear Posture Review.

These 2010 modernization plans assumed a reset with Russia. And they did not envision the rapid expansion of Chinese conventional and nuclear capabilities or the "no limits" partnership between an aggressive Moscow and Beijing bent on upsetting the international world order. This begs the question, then, whether the current nuclear modernization program—which amounts to a one-for-one replacement of nuclear force levels established in the 2010 New START—will be sufficient against two nuclear great powers.

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two nuclear great powers. In March, Senate Armed Services Committee Chairman Jack Reed (D-RI) asked General Anthony Cotton, head of US Strategic Command, how the US nuclear command is adapting to this "new trilateral nuclear competition." Cotton replied that the USA is "in an absolutely good place today with our [nuclear] systems... but the basis of which we did our modernization efforts was on a 2010 threat."

The Divide Over More Nuclear Weapons: The threats have grown manifestly worse since 2010, but the administration has been ambivalent about them. According to Sullivan in his recent speech, "the USA does not need to increase our nuclear forces to outnumber the combined total of our competitors in order to successfully deter them." Sullivan added that "effective deterrence means that we have a 'better' approach—not a 'more' approach." This position is at odds with Republican leaders in the House and Senate armed services committees, who have advocated "higher numbers and new capabilities" for nuclear weapons.

There are practical limits to how quickly the USA could expand its nuclear capabilities to address the expansion of China's nuclear forces. One option by the time New START expires in 2026 is to restore nuclear warheads to existing ICBMs and SLBMs that were removed to accommodate the lower New START force limits (a process called "uploading.

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Importantly, Sullivan said in his speech that "the type of limits the USA can agree to after [New START] expires will of course be impacted by the size and scale of China's nuclear build-up." The administration will require a sense of what additional nuclear forces may be needed beyond New START, both to ensure any negotiated limits provide the USA with headroom to deploy sufficient forces in the future, and because adjustments to US nuclear posture will likely take years to implement.

It is entirely conceivable that Russia and the USA could agree to new (modestly larger) nuclear force limits that consider US requirements to address China's expanding nuclear capabilities and limit and reduce Russia's regional nuclear weapons and new novel long-range systems that are not covered under New START. Such an approach might maintain limits (albeit somewhat higher than the current 1,550 warhead limit in New START) on all US and Russian nuclear forces while allowing the USA to address the problem of two nuclear peers.

The Bargain the White House and Congress could Strike: Sullivan was correct when he said that "responsibly enhancing our deterrent capabilities allows us to negotiate arms control from a position of strength and confidence." But if "responsibly" implies a set policy of no new US nuclear capabilities or no expansion of US strategic nuclear forces, then Russia has no reason to come to the negotiating table. A big incentive for Moscow to negotiate is if it fears the USA will build up its own nuclear arsenal. Just as important, an arms control approach that does not include some augmented nuclear capabilities will be a non-starter for Republicans and some Democrats on Capitol Hill.

A bargain is required. The Biden administration could, for example, agree to develop the SLCM-N and prepare for a nuclear upload onto existing ICBMs and SLBMs. In exchange, congressional Republicans could lend public support to the administration's efforts, hopefully fruitful but perhaps not, to secure a post–New START follow-on arms control framework or agreement. In such a deal, the arms control community would see the

value in continued constraints on arms competition, while the deterrence community would welcome augmented nuclear capabilities to answer the growth in Chinese nuclear forces. Russia also would have an interest in limiting the potential expansion of US nuclear forces. This approach leaves out China for the time being, given its unwillingness to engage in a dialogue; but any future limits on Russian and US forces will have to take into account the likely expansion of China's nuclear arsenal.

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During the question-and-answer period following his speech, Sullivan spoke about the bipartisan US Senate support of the 2010 New START. He failed to mention, however, that the Obama administration's commitment—insisted upon by Republican senators as part of the deal for New START—to modernize each leg of the nuclear triad enabled that consensus. It is worth demonstrating once more that nuclear deterrence and arms control go hand in hand.

Source: https://www.atlanticcouncil.org/blogs/new-atlanticist/before-embarking-on-arms-control-talks-biden-needs-a-nuclear-deal-with-congress/, 14 June 2023.

Among a slew of inductions to be made into the Russian Navy to bolster its power at sea this year, a nuclear Belgorod submarine equipped with the lethal nuclear torpedo 'Poseidon' will enter service sometime in 2023. It is also often called an 'Intercontinental Nuclear-Powered Nuclear-Armed Autonomous Torpedo.

OPINION – Sakshi Tiwari

Evading US Multi-Layered Defense System, Russia to Induct its Nuclear Armed, Nuclear Powered Autonomous Torpedo in 2023

Among a slew of inductions to be made into the Russian Navy to bolster its power at sea this year, a nuclear Belgorod submarine equipped with the lethal nuclear torpedo 'Poseidon' will enter service sometime in 2023. It is also often called an 'Intercontinental Nuclear-Powered Nuclear-Armed Autonomous Torpedo.' This announcement was made by the Commander-in-Chief of the Russian Navy, Admiral Evmenov, who stated that the Belgorod nuclear submarine, which is the carrier of the Poseidon submarine nuclear drones, will be put into service in 2023. "As the president said, we will accept it this year," Evmenov said.

The multi-purpose nuclear submarine "Belgorod" is an experimental vessel for Poseidon drones, launched in April 2019 at Sevmash. Previous reports from July last year indicated that the Belgorod submarine was already inducted into service. However, the latest announcement implies the imminent induction of a Poseidon-armed Belgorod into the Russian service.

Although all the details about this set of nuclear-weapon-carrying submarines are classified, it has been previously noted that it is the largest submarine built in 40 years. Project 09852 Belgorod is a sizable, stealthy, specially designed nuclear vessel constructed from the unfinished hull of an Oscar-II cruise missile submarine. It is believed to have two uses: the first being a host submarine or "mothership" for small, nuclear-powered submarines that can dive deeply, and the second for nuclear strike and deterrence.

The announcement by the Navy Chief comes months after the crew of the Belgorod nuclear submarine reportedly completed a series of tests

of the Poseidon torpedo mock-up. At the time, some unnamed sources told Russian media that test was carried out to check the operation of Poseidon's launch system. Among the vessels involved in the alleged preparations was the nuclear-powered Belgorod submarine. The weapon was fired to gauge how the sub would behave at various depths after launch. As per speculations, the Belgorod submarine equipped with Poseidon is expected to join the Russian Pacific fleet. Some unnamed sources stated earlier this year that Russia was working on a naval base to accommodate these Poseidon carriers and that the base would be completed early next year.

The Deadly Nuclear Poseidon is Coming to the Sea: *The Poseidon UUV is one of Russia's six strategic weapons, also known as 'Super Weapons,' that Russian President Putin unveiled during a speech in 2018 at the Manezh Central Exhibition Hall near the Kremlin. Russia's Poseidon superweapon gives nuclear deterrence a new dimension, maybe the most paradigm-shifting weapon in existence. According to some sources, the weapon's top speed might reach 108 knots, rendering it uncatchable and quicker than existing torpedoes. It is also elusive due to its approximately 1,000 meters (3,300 feet) operational depth.*

Poseidon was described as a strategic nuclear weapon with a range of thousands of miles in a Russian presentation (translated) that the BBC could capture on camera. It can destroy significant economic installations of the enemy in coastal areas and guarantee devastating damage to the country's territory by contaminating large areas with radioactive material, rendering them unusable for military, economic, or other activity for a considerable amount of time.

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Russians have long wished to get around the American ballistic missile defense systems set up in Europe, which has led to a geopolitical imbalance against Russia. The US has a satellite constellation with infrared sensors to find and monitor Russian intercontinental ballistic missiles. The activation of the missile engine produces intense heat in the air, which creates a temperature difference against the chilly background for the satellites above to detect. However, satellites can't see what happens in the depths of the sea. Besides, Poseidon is reportedly designed to emit very little heat and travel silently. The Russian military can therefore avoid a US BMD check by having the option to deploy nuclear weapons underwater. It is also said that Poseidon can make "three-dimensional" evasive maneuvers to lengthen its lifespan.

The threat of a Russian submarine armed with a deadly nuclear torpedo has already amplified risks for its foes in the West, owing to the nuclear brinkmanship shown by Russian politicians and media pundits ever since the Ukraine War started. For instance, Russian TV channel broadcasts have seen several cases of military commentators warning of the nuclear destruction of European countries, especially the UK. Earlier this year, Russian TV presenter and propagandist Vladimir Solovyov smirked as he predicted that if Poseidon struck Britain, it would trigger a tsunami and sink the country to the bottom of the ocean. Earlier, there were rumors that Russia could deploy the Poseidon-carrier Belgorod in the Arctic, which is already fast emerging as another confrontation zone between Moscow and the US-led NATO.

In April this year, Russian state media reported that the Russian Navy planned to launch a new

division of the Pacific submarine fleet equipped with lethal Poseidon nuclear-capable torpedoes. This fleet is expected to become operational by the end of 2024 or the first half of 2025. The Russian Naval Chief's announcement had laid all speculations to rest. So while there's little credible information in the public domain about the submarine or the nuclear torpedo, we know they are lethal and fast approaching deployment.

Source: https://eurasiantimes.com/new-sia-to-induct-its-nuclear-armed-nuclear-powered-autonomou/, 22 June 2023.

OPINION – James Holmes

What Happens to Russia's Nuclear Weapons if a Civil War Breaks Out?

This is an intriguing twist in efforts to maintain nuclear security. And by intriguing I mean downright scary. Civil war or a coup attempt appears to have engulfed Russia overnight, with the Wagner Group evidently seizing the military hub of Rostov-on-Don and marching on Moscow with 25,000 soldiers of fortune. The evident breakdown in civil order conjures the specter that nuclear weapons—or, more likely, materials useful for making nuclear or radiological weapons—might come under the control of rebel, insurgent, or terrorist forces, or even common criminals or gunrunners.

The evident breakdown in civil order conjures the specter that nuclear weapons—or, more likely, materials useful for making nuclear or radiological weapons—might come under the control of rebel, insurgent, or terrorist forces, or even common criminals or gunrunners.

And who knows what use they might make of doomsday armaments? Civil strife in an atomic state is a dimension of the second nuclear age to which specialists—including, on occasion, myself—have paid scant attention. That may have been an oversight. Certainly domestic turmoil has shaped nuclear security and strategy in the past. South Africa's apartheid regime dismantled its handful of tactical weapons to prevent the post-apartheid government from inheriting a nuclear arsenal. The Soviet Union came apart at the seams in 1991, casting doubt on who would oversee the Soviet nuclear armory. Post-Soviet Russia suffered through a traumatic 1990s when, for example, money was too tight to scrap old nuclear-powered submarines without external help. Back then the prospect of loose nukes was all too real.

But civil war is a creature of an altogether different—and more malevolent—order. In essence the second nuclear age is an age when more and more states acquire nuclear weapons, albeit in smaller numbers than the fearsome U.S. and Soviet inventories of old. Arms control has had its effect. Nuclear-weapon states now come in many shapes and sizes—measured by indices such as demographics, GDP, and natural resources—making for asymmetries less pronounced during the relatively symmetrical, bipolar, stable Cold War competition. They crowd one another in geographic space, and they have different agendas prone to misinterpretation by fellow nuclear-weapon states. Try convincing China that efforts to fortify deterrence vis-à-vis North Korea aim to shape strategic thinking in Pyongyang rather than Beijing.

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In short, the geometry of deterrence is now more intricate and difficult to manage than before. Such are the quandaries of the second nuclear age, when a nuclear exchange appears more likely if less apocalyptic than during the first. A debate commonly rages among specialists when a new gatecrasher joins the nuclear-weapons club.

Namely, will its leadership, armed forces, and society abide by the logic of mutual assured destruction the way nuclear powers did during the first nuclear age? If so, forbearance should result. If not, the world could have a colossal problem on its hands in the form of a renegade nuclear state primed to use the ultimate weapon to fight rather than deter. This is a worthwhile debate to conduct with regard to substate actors such as the Wagner Group or any other body that challenges a state's authority. It is far from a foregone conclusion that mutual assured destruction would govern how such groups put nukes to political use.

We can't compel Russian commanders or security managers to be good stewards of lethal matériel. But we can remain watchful. While tracking the fighting in Russia, Western intelligence services could also stand to monitor not just military but nonmilitary sites for signs of loose armaments or materials, just in case Russian nuclear security culture proves permeable. After all, forewarned is forearmed.

And how do you deter a nuclear-armed substate group? There's also the question of how to safeguard the makings of nuclear or radiological arms. Radiological substances seem more likely than full-up nuclear weapons to fall into the wrong hands, considering the elaborate precautions governments take to defend their arsenals against seizure or unauthorized use. But a variety of installations in a variety of fields, from nuclear power plants to medical-research facilities, employ radiologdical materials in their daily work. By and large these are not military installations with security up to military grade.

That being the case, the quality of the human beings comprising an installation's security force looms large. Quality is a function not just of education and training but of attitudes and morale. A knowledgeable, vigilant staff stands a solid chance of fulfilling its security mission. It is a sentry. Indifference or malice among the staff could deliver the rudiments of crude nuclear devices or dirty bombs into the hands of rebels, insurgents, terrorists, organized crime, or weapons traffickers. That's why it is crucial that leaders and managers of sites housing nuclear-relevant substances pay close scrutiny to nuclear security culture. They are cultural stewards, setting the tone for how the institution conducts its affairs.

Such a culture shapes assumptions among security personnel, habituating them to look out for and guard against threats not just from without but from within. In fact, the insider threat is more insidious and tough to protect against than is sabotage or a conventional frontal assault from outside. The former depends more on a healthy human factor within the institution, the latter more on equipment such as locks, gates, and material accounting and control systems. And human beings are far harder to gauge than hardware. Machinery exists to perform routine tasks, again and again, the same way every time. People are fallible.

We can't compel Russian commanders or security managers to be good stewards of lethal matériel. But we can remain watchful. While tracking the fighting in Russia, Western intelligence services could also stand to monitor not just military but nonmilitary sites for signs of loose armaments or materials, just in case Russian nuclear security culture proves permeable. After all, forewarned is forearmed.

Nowadays we in the West exercise little influence on Russian nuclear strategy or security beyond efforts to keep our deterrent forces strong. We can't compel Russian commanders or security managers to be good stewards of lethal matériel. But we can remain watchful. While tracking the fighting in Russia, Western intelligence services could also stand to monitor not just military but nonmilitary sites for signs of loose armaments or materials, just in case Russian nuclear security culture proves permeable. After all, forewarned is forearmed.

Source: https://www.19fortyfive.com/2023/06/what-happens-to-russias-nuclear-weapons-if-a-civil-war-breaks-out/, 25 June 2023.

NUCLEAR STRATEGY

RUSSIA

Putin Says Russia's New Sarmat Nuclear Missiles Soon Ready for Deployment

President Putin said that Russia's new generation of Sarmat intercontinental ballistic missiles, which are capable of carrying 10 or more nuclear warheads, would soon be deployed for combat duty. In a speech to new graduates of military academies, Putin stressed the importance of Russia's "triad" of nuclear forces that can be launched from land, sea or air. The first Sarmat launchers will be put on combat duty "in the near future", Putin said. Defence Minister Shoigu told the assembled graduates in the Kremlin's St George's Hall, which commemorates the greatest feats in Russian military history, that the "collective West" was waging a "real war" against Russia.

President Putin said that Russia's new generation of Sarmat intercontinental ballistic missiles, which are capable of carrying 10 or more nuclear warheads, would soon be deployed for combat duty. In a speech to new graduates of military academies, Putin stressed the importance of Russia's "triad" of nuclear forces that can be launched from land, sea or air.

Putin has repeatedly said since the start of the Ukraine conflict that Russia is ready to use all means, including nuclear weapons, to defend its "territorial integrity". Last year he said he was placing territories seized in Ukraine that Russia now claims as its own under Moscow's nuclear umbrella. The new Sarmat missile is designed to carry out nuclear strikes on targets thousands of missiles away in the USA or Europe. But its deployment has proceeded slower than planned, as Russia had said in April 2022 that it would be in place by autumn of that year.

Source: https://www.reuters.com/business/aerospace-defense/putin-says-russias-new-sarmat-nuclear-missiles-soon-ready-deployment-2023-06-21/, 21 June 2023.

USA

GOP Moves to Instate Sea-Launched Cruise Missile Nuclear Program

House Republicans adopted a measure to institutionalize the sea-launched cruise missile nuclear program, or SLCM-N. The Armed Services Committee voted along party lines to amend the fiscal 2024 National Defense Authorization Act with a provision that would create a program of record for SLCM-N. The Biden administration has sought to scrap research on SLCM-N and did not request funding for it in its FY24 budget request.

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Republicans teamed up with some Democrats last year to authorize $25 million to continue SLCM-N research in the FY23 defense authorization bill, rebuking the Biden administration's efforts to cancel it. The House's FY24 defense authorization bill, which the full Armed Services Committee is expected to advance early — paving the way for a full floor vote in July — would provide nearly $196 million for continued SLCM-N development. The former head of U.S. Strategic Command, which oversees the nuclear arsenal, Adm. Richard also backed SLCM-N in a letter to House Armed Services Chairman Mike Rogers, R-Ala., last year.

Source: https://www. defensenews.com/congress/budget/2023/06/22/gop-moves-to-instate-sea-launched-cruise-missile-nuclear-program/, 22 June 2023.

NUCLEAR ENERGY

BANGLADESH

Bangladesh to Receive Nuclear Fuel for Rooppur Plant in September

Bangladesh's dream of nuclear power generation is approaching reality, as the country is going to

receive nuclear fuel for the first unit of its maiden nuclear power plant next September. "The nuclear fuel — uranium — will arrive in Bangladesh in September. We are expecting that the IAEA director general and Russian president will virtually join our prime minister at the handover programme," said Science and Technology Minister Architect Yeafesh Osman.

As per the project plan, the first unit of the 2,400MW nuclear power plant is expected to commence commercial operation in the first quarter of 2024. The $13 billion project is being implemented by the Bangladesh Atomic Energy Commission (BAEC) with the technical and financial support of Russia.

"Implementation work of the Rooppur power plant has reached a point that we are very close to graduation [operation]," he said at a press conference organised by the Bangladesh Council of Science and Industrial Research (BCSIR) to launch Bangladesh's first smartphone-based application called "Surja Bidyut". The $13 billion project is being implemented by the Bangladesh Atomic Energy Commission with the technical and financial support of Russia. Before fuel delivery, safety measures and a lot of essential infrastructure, such as power transmission lines and telecommunication, have to be ensured and certified by the IAEA visiting team, said officials related to the project.

"When nuclear fuel arrives, then it is considered that the country is graduating for this work," he said. Bangladesh is implementing its maiden nuclear power generation infrastructure, the Rooppur Nuclear Power Plant at Ishwardiý upazila in ýPabnaý. As per the project plan, the first unit of the 2,400MW nuclear power plant is expected to commence commercial operation in the first quarter of 2024. The $13 billion project is being implemented by the Bangladesh Atomic Energy Commission (BAEC) with the technical and financial support of Russia. Before fuel delivery, safety measures and a lot of essential infrastructure, such as power transmission lines and telecommunication, have to be ensured and certified by the IAEA visiting team, said officials related to the project.

Refuelling Once Every 18 Months: The BAEC inked a contract with Russia's state-run uranium mining and nuclear fuel production company TVEL in August 2019 for importing nuclear fuel for the plant. Sources at the BAEC said one-third of the nuclear fuel in the plant will have to be changed every 18 months. Dr Md Shawkat Akbar, project director at Rooppur Nuclear Power Plant, earlier said that the necessary stock of uranium will remain on standby on the project site after the required amount is loaded into the rector. He said the Russian Federation will provide the fuel for the plant till 2027 under the general contract made as part of the construction. For that, Bangladesh will not need to pay them.

As per the contract with TVEL, considering the inflation of dollars and euros in the international market, the price per kilogram of uranium was estimated at $550 till 2027. As per a parameter of the Methodology of Contract Price, the cost of refuelling of a single unit will be $62 million each time. However, the price of the uranium will be evaluated and revised every 10 years. "Every year, there will be 30-35 tonnes of uranium for each unit of the plant," Dr Md Shawkat Akbar added.

Source: https://www.tbsnews.net/bangladesh/energy/rooppur-nuke-power-plant-be-inaugurated-september-science-minister-655378, 24 June 2023.

INDIA

India's first domestically built 700 MW nuclear reactor starts commercial operations in Gujarat

India's first indigenously developed 700 MW nuclear power reactor at the Kakrapar Atomic Power Project (KAPP) in Gujarat started commercial operations on Friday, a senior official said. "With great pleasure, this is to inform that our first indigenous 700 MWe Unit, KAPP-3, has become commercial on 30th June 2023 at 1000 Hrs," a senior KAPP official said. Presently, the unit is operating at 90 per cent of its total power, he said.

The NPCIL is building two 700 MW PHWRs at Kakrapar, which is also home to two 220 MW power plants. Various commissioning activities were underway at KAPP 4, which had achieved 96.92 per cent progress by May end, according to officials. The NPCIL plans to build sixteen 700 MW PHWRs across the country and has granted financial and administrative sanction for the same. Construction of 700 MW nuclear power plants is underway at Rawatbhata in Rajasthan (RAPS 7 and 8) and at Gorakhpur in Haryana (GHAVP 1 and 2). The government has sanctioned building of 10 indigenously developed PHWRs in fleet mode at four locations — Gorakhpur in Haryana, Chutka in Madhya Pradesh, Mahi Banswara in Rajasthan and Kaiga in Karnataka.

Source: https://economictimes.indiatimes.com/industry/energy/power/indias-first-domestically-built-700-mw-nuclear-reactor-starts-commercial-operations-in-gujarat/printarticle/101401165. cms, 30 June 2023.

RUSSIA

Rosatom Prepares for Export of Floating NPPs

Rosatom has signed an agreement with TSS Group on the sidelines of the St Petersburg International Economic Forum (SPIEF), to develop an energy fleet for foreign markets based on floating NPPs (FNPPs) with RITM-200M reactors. TSS Group is Russia's largest developer and manufacturer of integrated solutions for well completion and energy supply to the oil and gas sector with an operating development strategy in the Middle East. Rosatom and TSS Group will establish a joint venture, Energoflot, on a parity basis for the construction of a series of FNPPs with a capacity of at least 100 MWe and a service life of up to 60 years for foreign markets. The framework agreement is the basis for legally and financially binding documents, which will be signed later. Target markets include the countries of the Middle East, Southeast Asia, and Africa. Energoflot is expected to be put into operation in the period from 2029 to 2036.

Nikipelov, Rosatom, Deputy General Director for Mechanical Engineering & Industrial Solutions said that, since the commissioning of the world's first FNPP, the Akademik Lomonosov, in 2019, state and commercial companies both in Russia and abroad had shown great interest in the project. Velichko, Chairman of the Board of Directors of TSS Group ... added that the modularity of the source, that is, the ability to increase power as quickly and flexibly as possible, allows the client to receive as much energy as necessary at a particular location and in what place. ...

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Moreover, there will be a growing demand for the "green" production of hydrogen, LNG, ammonia and methanol in the coming decades. Earlier, in May, Rosatom DG Likhachev, during a meeting of Russian President Putin and other government members said that there was a demand for at least 15 floating power units. Currently, Rosatom is building four modernised FNPPs with RITM-200 reactor units that will supply power to the Baimskaya ore-mining zone in the Arctic.

Ruksha, Rosatom Deputy DG responsible for development of the Northern Sea Route, speaking on the sidelines of SPIEF, confirmed that there were specific orders for four FNPP units. ... Launch of the project was postponed from 2024 to 2027 to allow time for the project to be amended to use FNPPs as a power source. A sea terminal for the shipment of products from the Baimsky GOK with a capacity of up to 2m tonnens a year is planned to be built at Cape Nagleynyn by 2025. This will enable exploitation of the world's largest undeveloped deposit of gold and copper. The total resource potential of the Baimskaya area is 23m tonnes of copper and 2,000 tonnes of gold. The project is licensed until 2033.

Source: https://www.neimagazine.com/news/newsrosatom-prepares-for-export-of-floating-npps-10952190, 20 June 2023.

SOUTH KOREA

Korea to Resume Construction of Shin Hanul 3&4

South Korea has approved a plan to resume construction of units 3&4 at the Shin Hanul NPP in Uljin, North Gyeongsang Province. Shin Hanul 3&4 are APR1400. The total construction cost is $9.2bn and the project is scheduled to run until October 2033. The plan was approved at a meeting of the Power Development Project Promotion Committee. The meeting included officials from the Ministry of Trade, Industry & Energy (Motie), the Ministry of Strategy & Finance, the Ministry of Science & ICT, the Ministry of National Defence, the Ministry of Public Administration & Security, the Ministry of Agriculture & Food, the Ministry of Environment, the Ministry of Land, Infrastructure, Transport & Maritime Affairs, the Fire Administration and the Forest Service. The approval of the plan included 20 licensing and permitting procedures under the jurisdiction of 11 ministries required for the construction of NPPs.

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The two units, which had been approved in 2002 under the Dae-jung administration, were cancelled in 2017 as part of President Jae-in's nuclear phase-out policy. However, the nuclear phase out has been reversed by current administration of President Yoon, which reduced the approval time for implementation of the construction plan to 11 months. This is a 19-month reduction compared with an average 30 months for the previous three nuclear construction projects (Saeul 3&4, Shin Hanul 1&2 and Saeul 1&2). Under the current Tenth Basic Electricity Supply Plan, Shin Hanul 3&4 are scheduled to be completed in 2032 and 2033. However, the timing will depend on how long it takes to obtain construction approval from the Korean Nuclear Safety Commission. Relevant ministries, including the commission, are reportedly discussing the approval process after setting the time of the application for approval for the two nuclear reactors at July 2022.

Source: https://www.neimagazine.com/news/newskorea-to-resume-construction-of-shin-hanul-34-10946507, 16 June 2023.

Sweden's parliament adopted a new energy target, giving the right-wing government the green light to push forward with plans to build new nuclear plants in a country that voted 40 years ago to phase out atomic power. Changing the target to "100% fossil-free" electricity, from "100% renewable" is key to the government's plan to meet an expected doubling of electricity demand to around 300 TwH by 2040 and reach net zero emissions by 2045.

SWEDEN

Swedish Parliament Passes New Energy Target, Easing Way for New Nuclear Power

Sweden's parliament adopted a new energy target, giving the right-wing government the green light to push forward with plans to build new nuclear plants in a country that voted 40 years ago to phase out atomic power. Changing the target to "100% fossil-free" electricity, from "100% renewable" is key to the government's plan to meet an expected doubling of electricity demand to around 300 TwH by 2040 and reach net zero emissions by 2045.

Sweden's parties agreed a deal in 2016 that new reactors could be built at existing sites. However, without subsidies, it has been seen as too expensive. The new right-of-centre coalition says new reactors are essential to power the shift to a fossil-free economy and has promised generous loan guarantees. Around 98% of electricity in Sweden is already generated from water, nuclear and wind. State-owned utility Vattenfall is looking at building at least two SMRs and at extending the life of the country's existing reactors Critics say

nuclear power is expensive, will take too long to build and is unsafe. The focus on nuclear power is part of a wider shift in environmental policy in a country that has long touted itself as a "green" champion.

Source: https://www. reuters.com/sustainability/climate-energy/swedish-parliament-passes-new-energy-target-easing-way-new-nuclear-power-2023-06-20/, 20 June 2023.

SMALL MODULAR REACTORS

CANADA

Canadian Funding for SMRs

The Natural Sciences & Engineering Research Council of Canada (NSERC) and the Canadian Nuclear Safety Commission (CNSC) have announced funding of CAD9.4m ($7.13m) over three years, to support 29 research projects through the first phase of the NSERC-CNSC SMRs Research Grant Initiative. This is intended to enhance research and knowledge to support the deployment of SMRs in a safe and secure manner and the strengthen the science needed for regulatory decisions.

The Natural Sciences & Engineering Research Council of Canada (NSERC) and the Canadian Nuclear Safety Commission (CNSC) have announced funding of CAD9.4m ($7.13m) over three years, to support 29 research projects through the first phase of the NSERC-CNSC SMRs Research Grant Initiative.

The recipient projects will address research challenges and knowledge gaps ranging from the protection of the environment; the management of risks and cybersecurity solutions when deploying SMRs in remote locations; the understanding of nuclear material produced by SMRs; and the implication of human factors when working with SMRs. "NSERC is proud...to come." As part of the 2022 Federal Budget, CNSC was awarded CAD15m to partner with NSERC to fund research supporting the effective regulation and regulatory oversight of SMRs. NSERC and Natural Resources Canada (NRCan) have partnered to fund SMR research within the framework of Canada's SMR Action Plan, which was launched in April 2022. This funding will be delivered through NSERC's Alliance grants programme.

Source: https://www.neimagazine.com/news/newscanadian-funding-for-smrs-10961642, 23 June 2023.

POLAND

Conceptual Design of Polish HTGE Released

The conceptual design of a new Polish high-temperature research reactor, developed by the National Centre for Nuclear Research (NCBJ), has been unveiled. Developed with input from Japan, the reactor could be built in Poland at the NCBJ. The high-temperature gas-cooled reactor (HTGR) design - dubbed the HTGR-POLA - was developed by a team of the Department of Nuclear Energy and Environmental Analysis at NCBJ, working under the leadership of Professor Dabrowski.

The helium-cooled reactor - measuring 12.3 metres in height and with a diameter of 4.1 metres - will provide 30 MW of thermal power. It will feature a prismatic-type core consisting of hexagonal blocks. Moderated with graphite, the reactor will use TRISO-type fuel with 8-12% enrichment. The primary forced circulation helium cooling circuit will operate at a pressure of 6 MPa. The helium temperature at the reactor outlet will be 750°C, at the inlet 325°C. The reactor will feature passive and active safety systems, with a planned lifetime of 60 years.

NCBJ began work on conceptual design of an HTGR research reactor in 2021. In November last year, an agreement between JAEA and NCBJ added the basic design of the research reactor to their ongoing collaborative R&D on HTGR technology. The agreement supplements an earlier agreement by providing for R&D cooperation on the research reactor. High-temperature reactors capable of supplying steam of up to 1000°C could replace fossil fuel as heat sources for chemical and petrochemical industries, leading to the decarbonisation of many production processes as

well as enabling the economic production of hydrogen.

Source: https://www.world-nuclear-news.org/Articles/Conceptual-design-of-Polish-HTGR-released, 20 June 2023.

Rosatom and Sri Lanka have agreed to build a NPP with a capacity of up to 300 MWe, Sri Lanka's Ambassador to the Russian Federation Liyanage told RIA Novosti on the sidelines of the St Petersburg International Economic Forum (SPIEF).

SRI LANKA

Sri Lanka Considers Russian SMR

Rosatom and Sri Lanka have agreed to build a NPP with a capacity of up to 300 MWe, Sri Lanka's Ambassador to the Russian Federation Liyanage told RIA Novosti on the sidelines of the St Petersburg International Economic Forum (SPIEF). "There ...power plant." She added that now Sri Lanka, with the help of Rosatom, will begin to train specialists in the nuclear field. "The IAEA ..future," she stressed. Sri Lanka plans to build its first NPP with Russian technical support by 2032, news portal Derana reported, citing the Sri Lanka Atomic Energy Board (SLARB). "If all ...2032," the Board said at a meeting of the Parliamentary Sectoral Oversight Committee for Energy & Transport. Earlier, SLARB Chairman Rosa told Sri Lankan newspaper Daily Mirror that the country plans to have either off-shore or on–shore SMRs with a power capacity of up to 100 MWe per unit. The newspaper quoted Rosa as saying: "The government...waste."

Source: https://www.neimagazine.com/news/newssri-lanka-considers-russian-smr-10955684, 21 June 2023.

SWEDEN

Alleima Wins Order for Steam Generator Tubes for SMRs

The Swedish firm Alleima says it has been awarded an order from South Korea's Doosan for approximately 200 kM of steam generator tubes for NuScale's SMRs. The tubes will be installed in one of the first of the NuScale VOYGR SMR power plants. Deliveries are scheduled during 2024 and the NuScale Power Modules "are expected to be operational in 2029", Alleima said. The NuScale Power Module is a pressurised water reactor with all the components for steam generation and heat exchange incorporated into a single unit, generating 77 MWe, which in September 2020 became the first SMR design to receive approval from the US Nuclear Regulatory Commission. NuScale offers the units as VOYGR plants: a VOYGR-12 power plant comprising 12 modules is capable of generating 924 MWe. The company also offers four-module and six-module plants and other configurations based on customer needs.

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NuScale's SMR is based on PWR technology where Alleima's current steam generator tubing alloys are used. Alleima was previously Sandvik Materials Technology. The name change coincided with it beginning trading on Nasdaq Stockholm in August 2022. Last month NuScale announced that South Korea's Doosan Enerbility had begun the forging production process for the first module that will be deployed as part of a NuScale VOYGR-6 SMR power plant for the Carbon Free Power Project (CFPP) in the USA. NuScale placed its first upper reactor pressure vessel long-lead material production order with Doosan Enerbility at the end of 2022.

The CFPP is to be built at the US DOE's Idaho National Laboratory site near Idaho Falls and will use six of NuScale's 77 MWe power modules to generate 462 MWe of electricity. The plant could begin operations as soon as 2029, and Utah Associated Municipal Power Systems, a political subdivision of the state of Utah, is working to submit an application for a construction and operation licence to the US Nuclear Regulatory Commission in January 2024.

Source: https://www.world-nuclear-news.org/Articles/Alleima-wins-order-for-steam-generator-tubes-for-S, 21 June 2023.

NUCLEAR COOPERATION

INDIA–USA

Biden, Modi Affirm Commitment to Nuclear as Kovvada Plans Intensify

Nuclear energy is a necessary resource for meeting climate, energy transition and energy security needs, the leaders of India and the USA said. They also noted "ongoing negotiations" for the construction of six AP1000 reactors in India, as well as discussions on SMR development. PM Modi and President Biden's comments were made in a wide-ranging joint statement issued during Modi's visit to Washington DC this week. In it, they underscored "the important …needs". The leaders noted "ongoing negotiations between the NPCIL and Westinghouse Electric Company (WEC) for the construction of six nuclear reactors in India" and they also noted "the ongoing discussion on developing next generation SMR technologies in a collaborative mode for the domestic market as well as for export". SMRs do not currently feature in India's formal nuclear energy plans, although the government's NITI Aayog policy think-tank has said the government should consider including them.

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India and the USA signed a civil nuclear cooperation agreement (also known as a 123 Agreement) in 2008, after India - which is not a signatory of the international Nuclear NPT - reached a safeguards agreement with the IAEA. Kovvada, in Andhra Pradesh, was earmarked for the construction of six AP1000 pressurised water reactors as long ago as 2016, but contractual arrangements have yet to be finalised. In the statement, the USA also reaffirmed its support for India's membership of the NSG and said it would "continue engagement with likeminded partners to advance this goal". The NSG is a group of nuclear supplier countries, that contributes to the non-proliferation of nuclear weapons by controlling the export of materials, equipment and technology that could potentially be used in their manufacture. India formally applied to join the NSG in 2016, but to date the group - whose current members, unlike India, are all signatories of the NPT - has not reached a consensus on India's proposed membership.

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Source: https://www.world-nuclear-news.org/Articles/Biden,-Modi-affirm-commitment-to-nuclear-as-Kovvad, 23 June 2023.

IRAN–QATAR

Iran, Qatar Discuss Regional Developments & Nuclear Negotiations

Qatari Emir Sheikh Al Thani and Iranian Foreign Minister Abdollahian met in Doha to discuss regional developments and Tehran's nuclear negotiations. Abdollahian arrived in Qatar a day earlier on the first leg of his official visit to Persian Gulf states to discuss negotiations on the revival of the 2015 Iran nuclear deal (the JCPOA) and the removal of Western sanctions imposed on Tehran. In the meeting with Sheikh, Abdollahian emphasized Tehran's readiness to work with Qatar in expanding relations in different

bilateral areas and to speed up the implementation of previous trade and economic agreements between the two countries. He also called for enhancing talks and cooperation among the eight Persian Gulf countries to establish a collective mechanism for preserving their joint interests and security.

Abdollahian emphasized Tehran's readiness to work with Qatar in expanding relations in different bilateral areas and to speed up the implementation of previous trade and economic agreements between the two countries. He also called for enhancing talks and cooperation among the eight Persian Gulf countries to establish a collective mechanism for preserving their joint interests and security.

The Qatari emir, in turn, expressed his satisfaction with the strong and sincere ties between Qatar and Iran, stating that Iran has a special place in the region and that Qatar has no limits when it comes to expanding ties with Iran. Sheikh Tamim further expressed pleasure with the progress in ties between Tehran and Doha, emphasizing the need for both sides to step up their joint efforts to achieve the goals set during trade and economic talks between him and Iranian President Raisi.

It is unclear whether the new investment is part of the $65bn that China agreed for infrastructure building in Pakistan under its Belt and Road Initiative. The new project was originally planned to start some years ago, and Sharif thanked China for not rescheduling costs despite the long delay. Instead, he said, China had provided an initial $104.53m to start the project.

Following the meeting, the Iranian foreign minister took to Twitter, stating that the trip aligned with the government's commitment to maintaining a "balanced foreign policy" and furthering the "ongoing comprehensive development of ties with neighboring nations." Addressing Iran's top nuclear scientists on June 11, Iranian Supreme Leader Khamenei expressed openness to reaching a nuclear deal with the West. The USA, Ukraine, the UK, France, and Germany have all stated that the supply of Iranian-made drones to Russia violates a 2015 UN Security Council resolution endorsing the Iran nuclear deal.

Source: https://caspiannews.com/news-detail/iran-qatar-discuss-regional-developments-nuclear-negotiations-2023-6-21-0/, 22 June 2023.

PAKISTAN–CHINA

Pakistan and China Agree on Construction of Chashma 5

Pakistan and China have signed an agreement for construction of a 1,200 MWe Hualong One (HPR1000) reactor at unit 5 of the Chashma NPP in Pakistan's Punjab province. China National Nuclear Corporation (CNNC) President Yongge and Muhammad Rehman from the Pakistan Atomic Energy Commission (PAEC) signed the MOU. PM Sharif was also present alongside Chinese *Charge d'Affaires* Chunxue. Following the ceremony, PM Sharif told state- that work on the project would begin immediately. ... Pakistan is facing a serious balance of payments crisis, and Sharif thanked China for giving a discount on the cost.

It is unclear whether the new investment is part of the $65bn that China agreed for infrastructure building in Pakistan under its Belt and Road Initiative. The new project was originally planned to start some years ago, and Sharif thanked China for not rescheduling costs despite the long delay. Instead, he said, China had provided an initial $104.53m to start the project. Sharif that the project was initially approved during the government of deposed PM Sharif, but was "put on hold" by the subsequent government.

In November 2017, CNNC and PAEC had signed a cooperation agreement for Chashma 5. The project was originally planned to start around 2021. The Chashma NPP already hosts four Chinese-supplied CNP-300 pressurised water reactors, which were connected to the grid between 2000

and 2017. In addition, two 1,161 MWe Chinese-supplied Hualong One reactors have been constructed as units 2&3 of the Karachi plant in Sindh province. Construction of unit 2 began in 2015 and unit 3 in 2016, starting commercial operation in May 2021 and April 2022.

Source: https://www. neimagazine.com/news/newspakistan-china-agree-on-construction-chashma-5-10959214, 22 June 2023.

POLAND–USA

Polish Regulators Renew Cooperation with US NRC

The US NRC and Poland's National Atomic Energy Agency (PAA - Panstwowa Agencja Atomistyki), have renewed their cooperation agreement for a further five years. The cooperation will include exchanging information on Westinghouse's large AP1000 and GE Hitachi's BWRX-300 SMR designs. NRC Chair Hanson said: "We're eager... counterparts." The NRC's cooperation with the PAA began in 2010, when the first bilateral arrangement between the two agencies was signed. This is one of more than 50 bilateral agreements the NRC has signed with overseas regulatory counterparts over the past 40 years to exchange technical and regulatory information to improve nuclear safety. The heads of both institutions signed the new agreement during a bilateral meeting in Washington. The agreement assumes cooperation between PAA and NRC in various fields including:

- exchange of technical information,
- activities related to new technologies, such as advanced reactors and SMRs,
- nuclear safety research,
- training and employee participation in individual projects.

PAA said the most important activities will focus in the area of training and exchange of technical information. PAA and NRC will continue several months of internships for Polish experts in the USA. Last year, 12 employees of the Agency and the Office of Technical Inspection benefited from this form of training. In 2022, trainees were able to observe the commissioning tests of the AP1000 reactors at units 3&4 at the US Vogtle NPP. The organisation of workshops on nuclear safety policy and licensing processes is also planned.

Source: https://www.neimagazine.com/news/newspolish-regulators-renew-cooperation-with-us-nrc-10955621, 21 June 2023.

SOUTH KOREA–DENMARK

South Korea and Denmark to Collaborate on LEU Fuel Salt Production

South Korea's Kepco Nuclear Fuel (KNF) and GS Engineering & Construction (GS E&C) are to collaborate with Denmark's Seaborg Technologies to investigate the feasibility of developing a low enriched uranium (LEU) fuel salt production facility in South Korea. The companies see fluoride fuel salt supply as important for generation 4 advanced reactors.

South Korea's Kepco Nuclear Fuel (KNF) and GS Engineering & Construction (GS E&C) are to collaborate with Denmark's Seaborg Technologies to investigate the feasibility of developing a low enriched uranium (LEU) fuel salt production facility in South Korea. The companies see fluoride fuel salt supply as important for generation 4 advanced reactors. In April, Korea Hydro & Nuclear Power (KHNP), Korean shipbuilding and offshore construction company Samsung Heavy Industries (SHI) and Seaborg set up a consortium to develop and commercialise floating NPPs (FNPPs) using compact molten salt reactors (CMSR).

The power plants will be installed on barges to deliver from 200 MWe to 800 Mwe, with the first project expected to be a 200Mwe power barge. Previously, in January, South Korea's Samsung Heavy Industries (SHI) received Approval In Principle from the American Bureau of Shipping (ABS) for a conceptual design of a CMSR power barge using technology being developed by Seaborg.

Seaborg's CMSR uses a low enriched fluoride fuel salt which is not yet commercially available. KNF offers nuclear fuel production and fluorides handling expertise, while GS E&C has broad experience in a variety of engineering and construction projects. Seaborg is engaged with a number of research partners covering different aspects of the fuel salt and its properties, and the partners believe they have a solid foundation to investigate the path to Commercialization of fuel salt production.

In the CMSR the fuel is mixed into a molten fluoride salt which also acts as the coolant with significant safety benefits. Should the fuel salt come into contact with the atmosphere, it will simply cool down and become "solid rock, containing all the radioactive material within itself". The reactor "will operate at near-atmospheric pressures eliminating a wide range of accident scenarios".

According to Seaborg, in the CMSR the fuel is mixed into a molten fluoride salt which also acts as the coolant with significant safety benefits. Should the fuel salt come into contact with the atmosphere, it will simply cool down and become "solid rock, containing all the radioactive material within itself". The reactor "will operate at near-atmospheric pressures eliminating a wide range of accident scenarios". At the end of its 12-year fuel cycle, the fuel is returned to the supplier where short-lived fission products are separated and sent to storage. "Since…methods," says Seaborg.

The remaining fuel salt will be mixed into new CMSR fuel at the fuel supplying facility. There are a number of molten salt reactor projects under development worldwide. In the USA, companies such as Terrapower are receiving financial and other support from the US DOE. In Canada, Terrestrial Energy is developing its Integral Molten Salt Reactor, and UK-based MoltexFLEX has launched its FLEX reactor design based on molten salt technology. US company Thorcon's molten salt reactor has been under development for around nine years, with the aim of deploying it in Indonesia. However, as with Seaborg, all these projects remain in the design stage. Russia has also launched a programme to develop a molten salt reactor bringing together all its key institutes and nuclear enterprises to work on the project. It remains to be seen which of these projects is first to produce a demonstration plant.

Source: https://www.neimagazine.com/news/newssouth-korea-and-denmark-to-collaborate-on-leu-fuel-salt-production-10961645, 23 June 2023.

URANIUM PRODUCTION

CANADA

Western Uranium & Vanadium Corp. Operations UPDA

The development of the Company's new state-of-the-art mineral processing plant continues to progress well. The Utah mill site in the Green River Industrial Park has been upsized through the addition of adjacent land. This allows the future scale of operation to be increased beyond the initial planned annual production of two million pounds of uranium and six to eight million pounds of vanadium. Maverick Strategic Minerals Corp., a wholly owned subsidiary of Western, was formed as an operating entity for the purpose of developing, building, owning and operating the mineral processing facility. The selection process for engineering, environmental, and permitting contractors remains ongoing.

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Western Uranium & Vanadium Corp. is a Colorado-based uranium and vanadium conventional mining company focused on low cost near-term production of uranium and vanadium

in the western USA, and development and application of kinetic separation. The results from the ongoing project at the Sunday Mine Complex ("SMC") continue to vastly exceed expectations. This began as a development project to drive a drift ~150 feet from the historical workings to the nearest surface exploration drill hole defining the GMG Ore Body. Subsequent to 30 feet of waste rock removal, high-grade uranium ore was continuously intersected. This caused the team to shift from development to mining and stockpiling of the ore. As previously reported, there was a post-processing recovery value of six million dollars ($6,000,000) accumulated in the uranium/vanadium stockpiles. Western's in-house mining team has continued to drive this drift and calculates less than 30 feet remaining before reaching the target ore hole. The GMG Ore Body is now ready for full-scale production.

Peninsula Energy does a different kind of mining than traditional open-pit digging. It uses less disruptive in-situ extraction, which involves injecting a solution into an ore-bearing aquifer and pumping uranium out of the ground.

The US nuclear fuel and services company Centrus has completed its operational readiness reviews and received regulatory approval to possess uranium at its Piketon, Ohio site and introduce uranium into the cascade of centrifuges it has constructed there.

Source: https://finance.yahoo.com/news/western-uranium-vanadium-corp-operations-133200542.html, 21 June 2023.

GENERAL

As Nuclear Power Gains Steam, Uranium Mining and its Impacts May Grow in the Mountain West

Behind a glass case at the Riverton Museum in central Wyoming sits an unassuming silver metal box with black dials on it. The electronic instrument is a Geiger counter first used by a local couple in the 1950s. One day, they used this very device to discover uranium in this part of Wyoming, a district known as the Gas Hills. This discovery started a boom in Wyoming that employed thousands of people and lasted into the early '80s. During that era, there were also active mines in Colorado, New Mexico and Utah. At one point, the U.S. produced more uranium than anywhere else in the world.

A scare at Three Mile Island in Pennsylvania helped spark an anti-nuclear movement in the U.S., and demand began to plummet. Since then, American uranium mining has dropped. The industry employs just a few hundred people and production reached near all-time lows in 2021. Peninsula Energy does a different kind of mining than traditional open-pit digging. It uses less disruptive in-situ extraction, which involves injecting a solution into an ore-bearing aquifer and pumping uranium out of the ground. This process has still led to spills in Wyoming, but CEO Heili said he's committed to mitigating the environmental impacts.

Source: https://www.kuer.org/business-economy/2023-06-21/as-nuclear-power-gains-steam-uranium-mining-and-its-impacts-may-grow-in-the-mountain-west, 21 June 2023.

USA

Centrus HALEU Plant Receives Regulatory Clearance

The US nuclear fuel and services company Centrus has completed its operational readiness reviews and received regulatory approval to possess uranium at its Piketon, Ohio site and introduce uranium into the cascade of centrifuges it has constructed there. The company said it remains on track to begin production of high-assay low-enriched uranium (HALEU) at the plant before the end of the year. Centrus began construction of the demonstration cascade of 16 centrifuges in 2019 under contract with the US DOE, and last year secured a further USD150 million of cost-shared funding to finish the cascade, complete final regulatory steps, begin operating the cascade, and produce up to 20 kg of HALEU by the end of this

year. The operational readiness reviews were required under the Centrus licence from the US Nuclear Regulatory Commission (NRC), which was amended in 2021 to allow the Piketon facility to produce HALEU.

Russia has repeatedly suggested that it may deploy tactical nuclear arms during its war in Ukraine, drawing criticism from the U.S. and Europe, as well as countries including China and India that have been more supportive of the government in Moscow. Ukrainian forces have begun a long-planned counteroffensive to reclaim territory in the country's east and south occupied by Russia.

HALEU fuel contains uranium enriched to between 5% and 20% uranium-235 – higher than the uranium fuel used in light-water reactors currently in operation, which typically contains up to 5% uranium-235. It will be needed by most of the advanced reactor designs being developed under the DOE's Advanced Reactor Demonstration Program.

Source: https://www. world-nuclear-news.org/ Articles/Centrus-HALEU-plant-receives-regulatory-clearance, 15 June 2023.

NUCLEAR PROLIFERATION

BELARUS

Belarusian Leader Hints that he has already Received Russian Nuclear Bombs

Belarusian President Lukashenko has suggested Russian tactical nuclear weapons have already arrived in his country, even as Russian President Putin said delivery would only begin next month. "We have missiles and bombs, we have received from Russia," Lukashenko said. He then boasted that the weapons are "three times more powerful" than the atomic bombs dropped on Hiroshima and Nagasaki in World War II, saying they were capable of killing a million people "immediately." Putin told Lukashenko at a televised meeting in Russia's Sochi on Friday that construction of nuclear storage in Belarus would be completed by July 7 or 8 and that transfer of the tactical weapons would begin soon after.

Russia has repeatedly suggested that it may deploy tactical nuclear arms during its war in Ukraine, drawing criticism from the U.S. and Europe, as well as countries including China and India that have been more supportive of the government in Moscow. Ukrainian forces have begun a long-planned counteroffensive to reclaim territory in the country's east and south occupied by Russia. Lukashenko, whose country has a 1,000-kilometer frontier with Ukraine as well as borders with NATO members Poland, Lithuania and Latvia, allowed Russia to use Belarus as a launchpad for a failed attempt to capture Kyiv early in its February 2022 invasion.

Source: https://www. japantimes.co.jp/news/ 2023/06/15/world/belarus-russia-nuclear-weapons-arrive/, 15 June 2023.

IRAN

Momentum Building in Iran Talks with West

Momentum appears to be building to revive negotiations around Iran's growing nuclear program. Talks between Iran and the EU on Wednesday focused on key sticking points, including nuclear enrichment levels and Iranian cooperation with the IAEA, one diplomatic source briefed on the matter said.

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The two-day discussion in Doha between EU diplomat Mora and the Iranian top nuclear negotiator, Kani, appears to be "leading to positive developments on many issues," the source added. The meeting came a week after Kani met with officials from the signatories to the deal – formally known as the JCPOA – France, Germany and the UK. Iran's Foreign

Minister Abdollahian was also in Doha on Tuesday before traveling to Oman on Wednesday. Both Qatar and Oman have played mediating roles between Iran and Western powers in the past.

Source: https://edition.cnn.com/2023/06/21/middleeast/iran-talks-kani-mora-intl/index.html, 22 June 2023.

USA–SOUTH KOREA

'Washington Declaration' a Step in Right Direction for Korea-US Alliance: Rep. Bera

The recently signed Washington Declaration on US extended deterrence is a step in the right direction to address the nuclear threat posed by North Korea, a US lawmaker said. Rep. Bera also insisted that the bilateral agreement between the allies is a step that will help enhance their joint deterrence while respecting the Nuclear Nonproliferation Treaty. The Washington Declaration came in the wake of a growing call in South Korea to arm itself with its own nuclear weapons against North Korea's evolving nuclear threat.

The US reaffirmed its strong commitment to extended deterrence, which refers to its commitment to help defend South Korea using all its military, including nuclear, capabilities, while agreeing to launch a new Nuclear Consultative Group, which the allies said will allow South Korean input into how or even when the US should consider using its nuclear capabilities against threats facing South Korea. Seoul, in return, reaffirmed its commitment to the NPT.

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Bera noted Seoul understands "the risk of setting a nuclear arms race off in East Asia."

Source: https://m.koreaherald.com/amp/view.php?ud=20230623000121, 23 June 2023.

NUCLEAR NON-PROLIFERATION

GENERAL

US Convenes Nuclear Weapons Meeting with China, France, Russia, UK

The US this month convened a meeting of working-level experts from China, France, Russia and the UK to discuss nuclear weapons issues including strategic risk reduction, the State Department said. White House national security spokesperson John Kirby said the talks were part of "a routine, continuing dialogue." The department said in a statement that Washington hosted the meeting on June 13-14 in Cairo among the five nuclear weapons states, describing it as "an ongoing exchange in the context of the NPT."

The experts were drawn from the countries' respective ministries of foreign affairs and defense, the department said. They "discussed…policy," it added. The NPT, which took effect in 1970, aims to halt the spread of nuclear weapons-making capability and guarantee the right of members to develop nuclear energy for peace means. The treaty allowed the five nuclear weapons states - who are the permanent members of the United Nations Security Council - to keep their nuclear arsenals. A State Department spokesperson said expert representatives had also met in Dubai in February as part of the dialogue under the NPT, which the USA is currently chairing.

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Source: https://www.reuters.com/world/us-convenes-nuclear-meeting-with-china-france-russia-uk-state-dept-2023-06-23/, 24 June 2023.

NUCLEAR SECURITY

UKRAINE

IAEA Director General Statement on Situation in Ukraine

The IAEA experts have so far found no visible indications of mines or other explosives currently planted at Ukraine's Zaporizhzhya Nuclear Power Plant (ZNPP), but they still need additional access to carry out further such checks at the site, Director General Rafael Mariano Grossi said today.

The team of IAEA experts were today able to inspect parts of the plant's cooling system, including some sections of the perimeter of the large cooling pond and the isolation gate of the discharge channel of the nearby Zaporizhzhya Thermal Power Plant (ZTPP). Both this channel and the cooling pond hold reserves of water that remain available for use by the ZNPP despite the destruction of the downstream Kakhovka dam more than three weeks ago.

Russia urged the IAEA to ensure Ukraine does not shell the Zaporizhzhia NPP, saying it was otherwise operating safely. Likhachev, chief executive of the Russian state nuclear energy firm Rosatom, made the comments at a meeting with IAEA chief Grossi in the Russian city of Kaliningrad, Rosatom said in a statement, after Grossi visited the plant last week.

The IAEA experts have also been conducting regular walkdowns across the six reactor units and other areas around the site. Access to further areas is still expected, including parts of the turbine halls and some parts of the cooling system. As previously indicated, the IAEA is aware of reports that mines and other explosives have been placed in and around the ZNPP, including mines near the cooling pond. "We take all such reports very seriously and I have instructed our experts at the site to look into this matter and request the access they need for doing their job. Until now they have not observed any mines or other explosives. Further access will still be needed," Director General Grossi said.

As Director General Grossi said last week, no mines were observed at the site during his visit to the ZNPP on 15 June, his third in less than ten months. However, the IAEA has been aware of a previous placement of mines outside the plant perimeter, which the Agency has reported about earlier, and also at particular places inside. ...

Source: https://www.iaea.org/newscenter/pressreleases/update-168-iaea-director-general-statement-on-situation-in-ukraine-0, 30 June 2023.

Russia Asks IAEA to Ensure Zaporizhzhia Nuclear Plant Security

Russia urged the IAEA to ensure Ukraine does not shell the Zaporizhzhia NPP, saying it was otherwise operating safely. Likhachev, chief executive of the Russian state nuclear energy firm Rosatom, made the comments at a meeting with IAEA chief Grossi in the Russian city of Kaliningrad, Rosatom said in a statement, after Grossi visited the plant last week. The IAEA said this week that the power plant was "grappling with...water-related challenges" after the destruction of the Kakhovka dam emptied the vast reservoir on whose southern bank the plant sits.

It also said the military situation in the area had become increasingly tense as Kyiv began a counteroffensive against the Russian forces that have seized control of swathes of eastern and southern Ukraine. Moscow and Kyiv have regularly accused each other of shelling Europe's largest nuclear power station, with its six-offline reactors. International efforts to establish a demilitarised zone around it have so far failed.

Source: https://www.reuters.com/world/europe/russia-asks-iaea-ensure-zaporizhzhia-nuclear-plant-security-2023-06-23/, 23 June 2023.

IAEA's Grossi Returns from Zaporizhia NPP

IAEA DG Grossi, after returning from talks in Kyiv and at the Zaporizhia NPP (ZNPP), provided an update on the IAEA website. His eighth mission to Ukraine since February 2022 took place amid reports of a Ukrainian counteroffensive being under way, including in the Zaporizhia region near the nuclear plant, which is currently controlled by Russia.

Since Russia took control of ZNPP in March 2022 as part of its special military operation in Ukraine, the Russian National Guard has been protecting the station and in October, Russian President Putin signed a decree formally transferring ZNPP to Russian jurisdiction under nuclear utility Rosenergoatom (part of Rosatom.

Since Russia took control of ZNPP in March 2022 as part of its special military operation in Ukraine, the Russian National Guard has been protecting the station and in October, Russian President Putin signed a decree formally transferring ZNPP to Russian jurisdiction under nuclear utility Rosenergoatom (part of Rosatom). A Russian Federal State Unitary Enterprise. Zaporizhia NPP was established by Rosenergoatom to operate the plant. However, Ukrainian nuclear utility Energoatom still claims ownership of the plant. IAEA has had experts permanent stationed at the plant – the Support & Assistance Mission to Zaporizhia (ISAMZ).

Reports by Russian military analysts continue to suggest that retaking control of ZNPP is one of the main objectives of the Ukrainian counter-offensive. Russia and Ukraine have blamed each other for shelling that has repeatedly downed power lines vital to cooling the reactors, which are shut down but which need a constant supply of electricity to keep the nuclear fuel inside cool and prevent a possible meltdown. Russia and Ukraine have also accused each other of destroying the Nova Kakhovka dam on the Dniepr River, which has depleted water levels in the nearby reservoir, putting at risk cooling water for the six ZNPP reactors.

Source: https://www.neimagazine.com/news/newsiaeas-grossi-returns-from-zaporizhia-npp-10952693, 20 June 2023.

Ukraine Spy Chief Accuses Russia of 'Mining' Cooling Pond at Zaporizhzhia Nuclear Plant

Ukraine's military intelligence chief accused Russia of "mining" the cooling pond used to keep the reactors cool at the Russian-occupied Zaporizhzhia nuclear plant in Ukraine's south. The six-reactor complex, Europe's biggest nuclear plant, has been under occupation since shortly after Moscow's forces invaded in February last year.

The two sides have accused each other of shelling the plant and its environs, and international efforts to establish a demilitarised zone around the complex have failed so far. Ukraine's Defence Ministry, meanwhile, dismissed as "null and void" a Russian suggestion that it could be building a "dirty bomb". The ministry said the suggestion, made by Naryshkin, the head of Russia's SVR foreign intelligence service, was first advanced by Moscow last year.

Ukraine's military intelligence chief accused Russia of "mining" the cooling pond used to keep the reactors cool at the Russian-occupied Zaporizhzhia nuclear plant in Ukraine's south. The six-reactor complex, Europe's biggest nuclear plant, has been under occupation since shortly after Moscow's forces invaded in February last year.

Source: https://www.reuters.com/world/europe/ukraine-spy-chief-accuses-russia-mining-cooling-pond-zaporizhzhia-nuclear-plant-2023-06-20/, 21 June 2023.

NUCLEAR SAFETY

NETHERLANDS

IAEA Finds High Level of Safety in Netherlands

An IAEA Integrated Regulatory Review Service (IRRS) mission said the Government of the Netherlands and the national regulatory bodies have demonstrated their commitment to continuous improvement in nuclear and radiation safety. The team advised the country to ensure

adequate regulations and sufficient resources to regulate future facilities and activities.

The mission, conducted at the request of the Government, was hosted by the Authority for Nuclear Safety & Radiation Protection (ANVS). It was part of the second IRRS cycle to the Netherlands. The first IRRS mission in the Netherlands took place in 2014, with a follow-up review in 2018. The team, comprising 16 senior regulatory experts from 13 member states and three IAEA staff members, reviewed the regulatory oversight of facilities, activities, and exposure situations. The mission included interviews and discussions with representatives from the ANVS, the Ministry of Infrastructure & Water Management (I&W), the Ministry of Social Affairs & Employment (SZW), the Netherlands Labour Authority (NLA), the Ministry of Health, Welfare & Sports (VWS) and the Health & Youth Care Inspectorate (IGJ). The team also visited the Borssele NPP, the Central Organisation for Radioactive Waste, the Research Reactor at the Reactor Institute Delft and the Reinier de Graaf Hospital to observe inspections conducted by the Netherlands regulators.

Prime Minister Plenkovic promised the highest safety standards will be applied during the construction of Croatia's first radioactive waste disposal site near the border with Bosnia and Herzegovina after a joint session of Croatian and Bosnian governments in Zagreb.

The Borssele NPP contributes 3.3% of the total electricity generation in the Netherlands. At the end of 2022, the Dutch Government announced the Borssele site as the preferred location for two new nuclear power units. One reactor, in Dodewaard, is in permanent shutdown since 1997. The final mission report will be provided to ANVS in about three months. The Netherlands plans to make the report public.

Source: https://www.neimagazine.com/news/newsiaea-finds-high-level-of-safety-in-netherlands-10961643, 23 June 2023.

The New York State Assembly voted to ban nuclear plants from dumping radioactive waste into the Hudson River. The legislation (S6893), sponsored by Sen. Harckham (D), passed unanimously through the Senate on June 9, before the legislature's regular session adjourned. The lower chamber returned to Albany this week for a two-day special session.

NUCLEAR WASTE MANAGEMENT

CROATIA

Croatian PM Promises Safe Nuclear Waste Storage Despite Bosnian Scepticism

Prime Minister Plenkovic promised the highest safety standards will be applied during the construction of Croatia's first radioactive waste disposal site near the border with Bosnia and Herzegovina after a joint session of Croatian and Bosnian governments in Zagreb, though Bosnia's Foreign Trade Minister, Kosarac was reportedly less convinced. Modern-day Croatia and Slovenia co-own the Krsko NPP in Slovenia, which became operational in 1983 as the first and only such plant in the former Yugoslavia. The plant produces some six billion kWh of power every year. Around half of its output is used up by Slovenia, which accounts for 20% of annual electricity consumption, with the other half sent to Croatia, which covers 14% of the country's needs.

Although initially meant to be decommissioned in 2023, after 40 years of use, in 2022, both countries agreed to extend its end-of-life to 2043. However, as nuclear waste has been temporarily stored on-site at Krsko, where the capacity has been foreseen for a 40-year operation, Croatia must now take custody of half of the waste. For this purpose, Croatian authorities selected a remote site in Cerkezovac in central Croatia, near the town of Dvor and only a few kilometres away from the border with Bosnia and Herzegovina. Lenkovic said that Croatia would apply the "highest safety standards" at Cerkezovac and that his country "has ..countries."

Source: https://www.euractiv.com/section/politics/news/croatian-pm-promises-safe-nuclear-

waste-storage-despite-bosnian-scepticism/, 21 June 2023.

USA

New York Passes Ban on Dumping Nuclear Waste into the Hudson

The New York State Assembly voted to ban nuclear plants from dumping radioactive waste into the Hudson River. The legislation (S6893), sponsored by Sen. Harckham (D), passed unanimously through the Senate on June 9, before the legislature's regular session adjourned. The lower chamber returned to Albany this week for a two-day special session. "This is really a values proposition," Harckham said. "It's really important that we elevate this conversation."

The measure is now headed to Gov. Hochul's desk ahead of plans from the Indian Point nuclear plant to release more than one million gallons of toxic wastewater into the Hudson River this summer. Holtec International Corp. purchased Indian Point Energy Center in 2021 for decommissioning, after the plant supplied the region with electricity for nearly 60 years. Indian Point's wastewater contains traces of radioactive tritium, which is linked to cancer, miscarriages, genetic defects, and other health issues.

Source: https://news.bloomberglaw.com/environment-and-energy/new-york-legislature-sends-nuclear-waste-bill-to-governors-desk, 21 June 2023.

Centre for Air Power Studies

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

Centre for Air Power Studies
P-284
Arjan Path, Subroto Park,
New Delhi - 110010
Tel.: +91 - 11 - 25699131/32
Fax: +91 - 11 - 25682533
Email: capsnetdroff@gmail.com
Website: www.capsindia.org

Edited by: Director General, CAPS

Editorial Team: Dr Sitakanta Mishra, Rishika Singh, Jay Desai, Dr. Ngangom Dhruba Tara Singh, Anubhav Shankar Goswami
Composed by: CAPS